



Y	=	YES
N/A	=	NOT APPLICABLE
RESPON. PARTY	=	RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODED.



2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

[illegible]

DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODEBOOK.



AIA

California

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

Y N/A RESPON. PARTY
= YES APPLICABLE
= NOT APPLICABLE
RESPONSIBLE PARTY (i.e. ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

| Y | NA | RESPON PARTY |

 | Y | NA | RESPON PARTY | | Y | NA | RESPON PARTY | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
|---|--------------------------|--------------
--
--
---|--|----|---|--|----------------------------|-------------------|------------------------------|------|---------------------------------|------|-----------------------------|------|---------------------------|------|---|------|--|-----|--|----
---|-----|---|-----|---|-----|---|-----|--|-----|------------------------------------|-----|---
---|--|-----|----------------|--|---
--
--
--|--|-----|---|-----|---------------------------------|-------------------|----------------------------------|-----|----------------------------------|-----|---------------------------------|-----|-----------------------------|-----|---------------------------------|-----|-----------------------------|-----|----------------------------------|-----|-------------------------------|-----|-------------------|-----|---------------------------|-----|----------------------------|-----|--|----|------------------|-----|-------------------------
--
--
--|---|-----|---|-----|------------------------|-------------------|-------------------------------------|-----|---------------------------|-----|---------------------------------|-----|----------------------------------|-----|---------------------------|-----|-------------------------|-----|-----------------------------|-----|--|-----|--|-----|---|-----|---|-----|---|-----|---|-----|--|-----|--|--|-------
--
---|--
--
--
--|--|-----|---|---------------|------------------------------|-------------------|---------------------------------|------|--------------------------|------|------------------------------|------|---|------|--|-----|--|-----|---|-----|--|-----|---|-----
---|-----|--|-----|---|----|---|---
--|-----|-------------------------|--|---
--
---|--|-----|---|-----|---------------------------|---------------|---------------------------------|------|----------------------------------|------|---------------------------|------|---------------------------|------|---|------|--|-----|--|-----
---|-----|---|-----|---|-----|---|----|--|-----|-----------|--|-------
---|---|-----|---|--|---|-----|--------------------|-----|------------------------|-----|--------------------------|-----|------------------------------|-----|-------------------------|-----|---------------|-----|--------------------|-----|-------------------|-----|--|--|--|--|---|--|---|--|---
--|---|--|--|--|--|--|--
--
---|--|--|---|--|---------|---------------|------------------------------|------|---------------------------------|------|----------------|------|---------------------------|------|---|------|--|--|--|--
---|--|---|--|---|--|---|--|--|--|--|--|--
---|---|--|--|--|---|--|--|--|
| <input type="checkbox"/> | <input type="checkbox"/> | | 5.504.4 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | | 5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:
1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.

2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of <i>California Code of Regulations</i> , Title 17, commencing with Section 94507.

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | | <table><tr><th colspan="2">TABLE 5.504.4.1 - ADHESIVE VOC LIMIT^{1,2}</th></tr><tr><td colspan="2">Less Water and Less Exempt Compounds in Grams per Liter</td></tr><tr><th>ARCHITECTURAL APPLICATIONS</th><th>CURRENT VOC LIMIT</th></tr><tr><td>INDOOR CARPET ADHESIVES</td><td>50</td></tr><tr><td>CARPET PAD ADHESIVES</td><td>50</td></tr><tr><td>OUTDOOR CARPET ADHESIVES</td><td>150</td></tr><tr><td>WOOD FLOORING ADHESIVES</td><td>100</td></tr><tr><td>RUBBER FLOOR ADHESIVES</td><td>60</td></tr><tr><td>SUBFLOOR ADHESIVES</td><td>50</td></tr><tr><td>CERAMIC TILE ADHESIVES</td><td>65</td></tr><tr><td>VCT & ASPHALT TILE ADHESIVES</td><td>50</td></tr><tr><td>DRYWALL & PANEL ADHESIVES</td><td>50</td></tr><tr><td>COVE BASE ADHESIVES</td><td>50</td></tr><tr><td>MULTIPURPOSE CONSTRUCTION ADHESIVES</td><td>70</td></tr><tr><td>STRUCTURAL GLAZING ADHESIVES</td><td>100</td></tr><tr><td>SINGLE-PLY ROOF MEMBRANE ADHESIVES</td><td>250</td></tr><tr><td>OTHER ADHESIVES NOT SPECIFICALLY LISTED</td><td>50</td></tr><tr><th>SPECIALTY APPLICATIONS</th><th></th></tr><tr><td>PVC WELDING</td><td>510</td></tr><tr><td>CPVC WELDING</td><td>490</td></tr><tr><td>ABS WELDING</td><td>325</td></tr><tr><td>PLASTIC CEMENT WELDING</td><td>250</td></tr><tr><td>ADHESIVE PRIMER FOR PLASTIC</td><td>550</td></tr><tr><td>CONTACT ADHESIVE</td><td>80</td></tr><tr><td>SPECIAL PURPOSE CONTACT ADHESIVE</td><td>250</td></tr><tr><td>STRUCTURAL WOOD MEMBER ADHESIVE</td><td>140</td></tr><tr><td>TOP & TRIM ADHESIVE</td><td>250</td></tr><tr><th>SUBSTRATE SPECIFIC APPLICATIONS</th><th></th></tr><tr><td>METAL TO METAL</td><td>30</td></tr><tr><td>PLASTIC FOAMS</td><td>50</td></tr><tr><td>POROUS MATERIAL (EXCEPT WOOD)</td><td>50</td></tr><tr><td>WOOD</td><td>30</td></tr><tr><td>FIBERGLASS</td><td>80</td></tr><tr><td></td><td></td></tr><tr><td colspan="2">1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.

2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.
www.arb.ca.gov/DRDB/SC/CURHTMLR1168.PDF</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.2 - SEALANT VOC LIMIT</th></tr><tr><td colspan="2">Less Water and Less Exempt Compounds in Grams per Liter</td></tr><tr><th>SEALANTS</th><th>CURRENT VOC LIMIT</th></tr><tr><td>ARCHITECTURAL</td><td>250</td></tr><tr><td>MARINE DECK</td><td>760</td></tr><tr><td>NONMEMBRANE ROOF</td><td>300</td></tr><tr><td>ROADWAY</td><td>250</td></tr><tr><td>SINGLE-PLY ROOF MEMBRANE</td><td>450</td></tr><tr><td>OTHER</td><td>420</td></tr><tr><th>SEALANT PRIMERS</th><th></th></tr><tr><td>ARCHITECTURAL</td><td></td></tr><tr><td>NONPOROUS</td><td>250</td></tr><tr><td>POROUS</td><td>775</td></tr><tr><td>MODIFIED BITUMINOUS</td><td>500</td></tr><tr><td>MARINE DECK</td><td>760</td></tr><tr><td>OTHER</td><td>750</td></tr><tr><td colspan="2">NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.</td></tr><tr><td colspan="2">5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of <i>California Code of Regulations</i>, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</th></tr><tr><td colspan="2">GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS</td></tr><tr><th>COATING CATEGORY</th><th>CURRENT VOC LIMIT</th></tr><tr><td>FLAT COATINGS</td><td>50</td></tr><tr><td>NONFLAT COATINGS</td><td>100</td></tr><tr><td>NONFLAT HIGH GLOSS COATINGS</td><td>150</td></tr><tr><th>SPECIALTY COATINGS</th><th></th></tr><tr><td>ALUMINUM ROOF COATINGS</td><td>400</td></tr><tr><td>BASEMENT SPECIALTY COATINGS</td><td>400</td></tr><tr><td>BITUMINOUS ROOF COATINGS</td><td>50</td></tr><tr><td>BITUMINOUS ROOF PRIMERS</td><td>350</td></tr><tr><td>BOND BREAKERS</td><td>350</td></tr><tr><td>CONCRETE CURING COMPOUNDS</td><td>350</td></tr><tr><td>CONCRETE/MASONRY SEALERS</td><td>100</td></tr><tr><td>DRIVEWAY SEALERS</td><td>50</td></tr><tr><td>DRY FOG COATINGS</td><td>150</td></tr><tr><td>FAUX FINISHING COATINGS</td><td>350</td></tr><tr><td>FIRE RESISTIVE COATINGS</td><td>350</td></tr><tr><td>FLOOR COATINGS</td><td>100</td></tr><tr><td>FORM-RELEASE COMPOUNDS</td><td>250</td></tr><tr><td>GRAPHIC ARTS COATINGS (SIGN PAINTS)</td><td>500</td></tr><tr><td>HIGH-TEMPERATURE COATINGS</td><td>420</td></tr><tr><td>INDUSTRIAL MAINTENANCE COATINGS</td><td>250</td></tr><tr><td>LOW SOLIDS COATINGS¹</td><td>120</td></tr><tr><td>MAGNESITE CEMENT COATINGS</td><td>450</td></tr><tr><td>MASTIC TEXTURE COATINGS</td><td>100</td></tr><tr><td>METALLIC PIGMENTED COATINGS</td><td>500</td></tr><tr><td>MULTICOLOR COATINGS</td><td>250</td></tr><tr><td>PRETREATMENT WASH PRIMERS</td><td>420</td></tr><tr><td>PRIMERS, SEALERS, & UNDERCOATERS</td><td>100</td></tr><tr><td>REACTIVE PENETRATING SEALERS</td><td>350</td></tr><tr><td>RECYCLED COATINGS</td><td>250</td></tr><tr><td>ROOF COATINGS</td><td>50</td></tr><tr><td>RUST PREVENTATIVE
COATINGS</td><td>250</td></tr><tr><td>SHELLACS:</td><td></td></tr><tr><td>CLEAR</td><td>730</td></tr><tr><td>OPAQUE</td><td>550</td></tr><tr><td>SPECIALTY PRIMERS, SEALERS & UNDERCOATERS</td><td>100</td></tr><tr><td>STAINS</td><td>250</td></tr><tr><td>STONE CONSOLIDANTS</td><td>450</td></tr><tr><td>SWIMMING POOL COATINGS</td><td>340</td></tr><tr><td>TRAFFIC MARKING COATINGS</td><td>100</td></tr><tr><td>TUB & TILE REFINISH COATINGS</td><td>420</td></tr><tr><td>WATERPROOFING MEMBRANES</td><td>250</td></tr><tr><td>WOOD COATINGS</td><td>275</td></tr><tr><td>WOOD PRESERVATIVES</td><td>350</td></tr><tr><td>ZINC-RICH PRIMERS</td><td>340</td></tr><tr><td colspan="2">1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.</td></tr><tr><td colspan="2">5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers</td></tr><tr><td colspan="2">5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.</td></tr><tr><td colspan="2">5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</td></tr><tr><td colspan="2">5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</td></tr><tr><td colspan="2">5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.</td></tr><tr><td colspan="2">5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and
roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be
performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table></td></tr></table></td></tr></table></td></tr></table> | TABLE 5.504.4.1 - ADHESIVE VOC LIMIT ^{1,2} | | Less Water and Less Exempt Compounds in Grams per Liter | | ARCHITECTURAL APPLICATIONS | CURRENT VOC LIMIT | INDOOR CARPET ADHESIVES | 50 | CARPET PAD ADHESIVES | 50 | OUTDOOR CARPET ADHESIVES | 150 | WOOD FLOORING ADHESIVES | 100 | RUBBER FLOOR ADHESIVES | 60 | SUBFLOOR ADHESIVES | 50 | CERAMIC TILE ADHESIVES | 65 | VCT & ASPHALT TILE ADHESIVES | 50 | DRYWALL & PANEL ADHESIVES | 50 | COVE BASE ADHESIVES | 50 | MULTIPURPOSE CONSTRUCTION ADHESIVES | 70 | STRUCTURAL GLAZING ADHESIVES
 | 100 | SINGLE-PLY ROOF MEMBRANE ADHESIVES | 250 | OTHER ADHESIVES NOT SPECIFICALLY LISTED | 50 | SPECIALTY APPLICATIONS | | PVC WELDING | 510 | CPVC WELDING | 490

 | ABS WELDING | 325 | PLASTIC CEMENT WELDING | 250 | ADHESIVE PRIMER FOR PLASTIC | 550 | CONTACT ADHESIVE | 80 | SPECIAL PURPOSE CONTACT ADHESIVE | 250 | STRUCTURAL WOOD MEMBER ADHESIVE | 140 | TOP & TRIM ADHESIVE | 250 | SUBSTRATE SPECIFIC APPLICATIONS | | METAL TO METAL | 30 | PLASTIC FOAMS | 50 | POROUS MATERIAL (EXCEPT WOOD) | 50 | WOOD | 30 | FIBERGLASS | 80 | | | 1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.

2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.
www.arb.ca.gov/DRDB/SC/CURHTMLR1168.PDF | | | | | <table><tr><th colspan="2">TABLE 5.504.4.2 - SEALANT VOC LIMIT</th></tr><tr><td colspan="2">Less Water and Less Exempt Compounds in Grams per Liter</td></tr><tr><th>SEALANTS</th><th>CURRENT VOC LIMIT</th></tr><tr><td>ARCHITECTURAL</td><td>250</td></tr><tr><td>MARINE DECK</td><td>760</td></tr><tr><td>NONMEMBRANE ROOF</td><td>300</td></tr><tr><td>ROADWAY</td><td>250</td></tr><tr><td>SINGLE-PLY ROOF MEMBRANE</td><td>450</td></tr><tr><td>OTHER</td><td>420</td></tr><tr><th>SEALANT PRIMERS</th><th></th></tr><tr><td>ARCHITECTURAL</td><td></td></tr><tr><td>NONPOROUS</td><td>250</td></tr><tr><td>POROUS</td><td>775</td></tr><tr><td>MODIFIED BITUMINOUS</td><td>500</td></tr><tr><td>MARINE DECK</td><td>760</td></tr><tr><td>OTHER</td><td>750</td></tr><tr><td colspan="2">NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.</td></tr><tr><td colspan="2">5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of <i>California Code of Regulations</i>, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</th></tr><tr><td colspan="2">GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS</td></tr><tr><th>COATING CATEGORY</th><th>CURRENT VOC LIMIT</th></tr><tr><td>FLAT COATINGS</td><td>50</td></tr><tr><td>NONFLAT COATINGS</td><td>100</td></tr><tr><td>NONFLAT HIGH GLOSS COATINGS</td><td>150</td></tr><tr><th>SPECIALTY COATINGS</th><th></th></tr><tr><td>ALUMINUM ROOF COATINGS</td><td>400</td></tr><tr><td>BASEMENT SPECIALTY COATINGS</td><td>400</td></tr><tr><td>BITUMINOUS ROOF COATINGS</td><td>50</td></tr><tr><td>BITUMINOUS ROOF PRIMERS</td><td>350</td></tr><tr><td>BOND BREAKERS</td><td>350</td></tr><tr><td>CONCRETE CURING COMPOUNDS</td><td>350</td></tr><tr><td>CONCRETE/MASONRY SEALERS</td><td>100</td></tr><tr><td>DRIVEWAY SEALERS</td><td>50</td></tr><tr><td>DRY FOG COATINGS</td><td>150</td></tr><tr><td>FAUX FINISHING COATINGS</td><td>350</td></tr><tr><td>FIRE RESISTIVE COATINGS</td><td>350</td></tr><tr><td>FLOOR COATINGS</td><td>100</td></tr><tr><td>FORM-RELEASE COMPOUNDS</td><td>250</td></tr><tr><td>GRAPHIC ARTS COATINGS (SIGN PAINTS)</td><td>500</td></tr><tr><td>HIGH-TEMPERATURE COATINGS</td><td>420</td></tr><tr><td>INDUSTRIAL MAINTENANCE COATINGS</td><td>250</td></tr><tr><td>LOW SOLIDS COATINGS¹</td><td>120</td></tr><tr><td>MAGNESITE CEMENT COATINGS</td><td>450</td></tr><tr><td>MASTIC TEXTURE COATINGS</td><td>100</td></tr><tr><td>METALLIC PIGMENTED COATINGS</td><td>500</td></tr><tr><td>MULTICOLOR COATINGS</td><td>250</td></tr><tr><td>PRETREATMENT WASH PRIMERS</td><td>420</td></tr><tr><td>PRIMERS, SEALERS, & UNDERCOATERS</td><td>100</td></tr><tr><td>REACTIVE PENETRATING SEALERS</td><td>350</td></tr><tr><td>RECYCLED COATINGS</td><td>250</td></tr><tr><td>ROOF COATINGS</td><td>50</td></tr><tr><td>RUST PREVENTATIVE COATINGS</td><td>250</td></tr><tr><td>SHELLACS:</td><td></td></tr><tr><td>CLEAR</td><td>730</td></tr><tr><td>OPAQUE</td><td>550</td></tr><tr><td>SPECIALTY PRIMERS, SEALERS & UNDERCOATERS</td><td>100</td></tr><tr><td>STAINS</td><td>250</td></tr><tr><td>STONE CONSOLIDANTS</td><td>450</td></tr><tr><td>SWIMMING POOL COATINGS</td><td>340</td></tr><tr><td>TRAFFIC MARKING COATINGS</td><td>100</td></tr><tr><td>TUB & TILE REFINISH COATINGS</td><td>420</td></tr><tr><td>WATERPROOFING MEMBRANES</td><td>250</td></tr><tr><td>WOOD COATINGS</td><td>275</td></tr><tr><td>WOOD PRESERVATIVES</td><td>350</td></tr><tr><td>ZINC-RICH PRIMERS</td><td>340</td></tr><tr><td colspan="2">1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.</td></tr><tr><td colspan="2">5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers</td></tr><tr><td colspan="2">5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.</td></tr><tr><td colspan="2">5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the
requirements of the Carpet and Rug Institute Green Label program.</td></tr><tr><td colspan="2">5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</td></tr><tr><td colspan="2">5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.</td></tr><tr><td colspan="2">5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to
refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table></td></tr></table></td></tr></table> | TABLE 5.504.4.2 - SEALANT VOC LIMIT | | Less Water and Less Exempt Compounds in Grams per Liter | | SEALANTS | CURRENT VOC LIMIT | ARCHITECTURAL | 250 | MARINE DECK | 760 | NONMEMBRANE ROOF | 300 | ROADWAY | 250 | SINGLE-PLY ROOF MEMBRANE | 450 | OTHER | 420 | SEALANT PRIMERS | | ARCHITECTURAL | | NONPOROUS | 250 | POROUS
 | 775 | MODIFIED BITUMINOUS | 500 | MARINE DECK | 760 | OTHER | 750 | NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168. | | 5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of <i>California Code of Regulations</i> , Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49. | | |

 | | <table><tr><th colspan="2">TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</th></tr><tr><td colspan="2">GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS</td></tr><tr><th>COATING CATEGORY</th><th>CURRENT VOC LIMIT</th></tr><tr><td>FLAT COATINGS</td><td>50</td></tr><tr><td>NONFLAT COATINGS</td><td>100</td></tr><tr><td>NONFLAT HIGH GLOSS COATINGS</td><td>150</td></tr><tr><th>SPECIALTY COATINGS</th><th></th></tr><tr><td>ALUMINUM ROOF COATINGS</td><td>400</td></tr><tr><td>BASEMENT SPECIALTY COATINGS</td><td>400</td></tr><tr><td>BITUMINOUS ROOF COATINGS</td><td>50</td></tr><tr><td>BITUMINOUS ROOF PRIMERS</td><td>350</td></tr><tr><td>BOND BREAKERS</td><td>350</td></tr><tr><td>CONCRETE CURING COMPOUNDS</td><td>350</td></tr><tr><td>CONCRETE/MASONRY SEALERS</td><td>100</td></tr><tr><td>DRIVEWAY SEALERS</td><td>50</td></tr><tr><td>DRY FOG COATINGS</td><td>150</td></tr><tr><td>FAUX FINISHING COATINGS</td><td>350</td></tr><tr><td>FIRE RESISTIVE COATINGS</td><td>350</td></tr><tr><td>FLOOR COATINGS</td><td>100</td></tr><tr><td>FORM-RELEASE COMPOUNDS</td><td>250</td></tr><tr><td>GRAPHIC ARTS COATINGS (SIGN PAINTS)</td><td>500</td></tr><tr><td>HIGH-TEMPERATURE COATINGS</td><td>420</td></tr><tr><td>INDUSTRIAL MAINTENANCE COATINGS</td><td>250</td></tr><tr><td>LOW SOLIDS COATINGS¹</td><td>120</td></tr><tr><td>MAGNESITE CEMENT COATINGS</td><td>450</td></tr><tr><td>MASTIC TEXTURE COATINGS</td><td>100</td></tr><tr><td>METALLIC PIGMENTED COATINGS</td><td>500</td></tr><tr><td>MULTICOLOR COATINGS</td><td>250</td></tr><tr><td>PRETREATMENT WASH PRIMERS</td><td>420</td></tr><tr><td>PRIMERS, SEALERS, & UNDERCOATERS</td><td>100</td></tr><tr><td>REACTIVE PENETRATING SEALERS</td><td>350</td></tr><tr><td>RECYCLED COATINGS</td><td>250</td></tr><tr><td>ROOF COATINGS</td><td>50</td></tr><tr><td>RUST PREVENTATIVE COATINGS</td><td>250</td></tr><tr><td>SHELLACS:</td><td></td></tr><tr><td>CLEAR</td><td>730</td></tr><tr><td>OPAQUE</td><td>550</td></tr><tr><td>SPECIALTY PRIMERS, SEALERS & UNDERCOATERS</td><td>100</td></tr><tr><td>STAINS</td><td>250</td></tr><tr><td>STONE CONSOLIDANTS</td><td>450</td></tr><tr><td>SWIMMING POOL COATINGS</td><td>340</td></tr><tr><td>TRAFFIC MARKING COATINGS</td><td>100</td></tr><tr><td>TUB & TILE REFINISH COATINGS</td><td>420</td></tr><tr><td>WATERPROOFING MEMBRANES</td><td>250</td></tr><tr><td>WOOD COATINGS</td><td>275</td></tr><tr><td>WOOD PRESERVATIVES</td><td>350</td></tr><tr><td>ZINC-RICH PRIMERS</td><td>340</td></tr><tr><td colspan="2">1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.</td></tr><tr><td colspan="2">5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers</td></tr><tr><td colspan="2">5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.</td></tr><tr><td colspan="2">5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</td></tr><tr><td colspan="2">5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</td></tr><tr><td colspan="2">5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.</td></tr><tr><td colspan="2">5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings,
meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR
QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table></td></tr></table> | TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS ^{2,3} | | GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS | | COATING CATEGORY | CURRENT VOC LIMIT | FLAT COATINGS | 50 | NONFLAT COATINGS | 100 | NONFLAT HIGH GLOSS COATINGS | 150 | SPECIALTY COATINGS | | ALUMINUM ROOF COATINGS | 400 | BASEMENT SPECIALTY COATINGS | 400 | BITUMINOUS ROOF COATINGS | 50 | BITUMINOUS ROOF PRIMERS | 350 | BOND BREAKERS | 350 | CONCRETE CURING COMPOUNDS
 | 350 | CONCRETE/MASONRY SEALERS | 100 | DRIVEWAY SEALERS | 50 | DRY FOG COATINGS | 150 | FAUX FINISHING COATINGS | 350 | FIRE RESISTIVE COATINGS | 350
 | FLOOR COATINGS | 100
 | FORM-RELEASE COMPOUNDS | 250 | GRAPHIC ARTS COATINGS (SIGN PAINTS) | 500 | HIGH-TEMPERATURE COATINGS | 420 | INDUSTRIAL MAINTENANCE COATINGS | 250 | LOW SOLIDS COATINGS ¹ | 120 | MAGNESITE CEMENT COATINGS | 450 | MASTIC TEXTURE COATINGS | 100 | METALLIC PIGMENTED COATINGS | 500 | MULTICOLOR COATINGS | 250 | PRETREATMENT WASH PRIMERS
 | 420 | PRIMERS, SEALERS, & UNDERCOATERS | 100 | REACTIVE PENETRATING SEALERS | 350 | RECYCLED COATINGS | 250 | ROOF COATINGS | 50 | RUST PREVENTATIVE COATINGS | 250 | SHELLACS: | | CLEAR | 730
 | OPAQUE | 550 | SPECIALTY PRIMERS, SEALERS & UNDERCOATERS | 100 | STAINS | 250 | STONE CONSOLIDANTS | 450 | SWIMMING POOL COATINGS | 340 | TRAFFIC MARKING COATINGS | 100 | TUB & TILE REFINISH COATINGS | 420 | WATERPROOFING MEMBRANES | 250 | WOOD COATINGS | 275 | WOOD PRESERVATIVES | 350 | ZINC-RICH PRIMERS | 340 | 1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD. | | 5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers | | 5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database. | | 5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. | | 5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1. | | 5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5. | | 5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency. | | | | | <table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM
THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief
valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table> | TABLE 5.504.4.5 - FORMALDEHYDE LIMITS ¹ | | MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION | | PRODUCT | CURRENT LIMIT | HARDWOOD PLYWOOD VENEER CORE | 0.05 | HARDWOOD PLYWOOD COMPOSITE CORE | 0.05 | PARTICLE BOARD | 0.09 | MEDIUM DENSITY FIBERBOARD | 0.11 | THIN MEDIUM DENSITY FIBERBOARD ² | 0.13 | 1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM). | | 5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. | | 5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. | | SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. | | SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i> , or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂)
MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i> , Section 120(c)(4). | | SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L _w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L _w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L _w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf . | | SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and potentially other refrigerants. | | | | | 5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. | CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS | | | 702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or
contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. | 703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist. | | | |
| TABLE 5.504.4.1 - ADHESIVE VOC LIMIT ^{1,2} | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| Less Water and Less Exempt Compounds in Grams per Liter | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ARCHITECTURAL APPLICATIONS | CURRENT VOC LIMIT | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| INDOOR CARPET ADHESIVES | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CARPET PAD ADHESIVES | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| OUTDOOR CARPET ADHESIVES | 150 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| WOOD FLOORING ADHESIVES | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| RUBBER FLOOR ADHESIVES | 60 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SUBFLOOR ADHESIVES | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CERAMIC TILE ADHESIVES | 65 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| VCT & ASPHALT TILE ADHESIVES | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| DRYWALL & PANEL ADHESIVES | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| COVE BASE ADHESIVES | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MULTIPURPOSE CONSTRUCTION ADHESIVES | 70 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| STRUCTURAL GLAZING ADHESIVES | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SINGLE-PLY ROOF MEMBRANE ADHESIVES | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| OTHER ADHESIVES NOT SPECIFICALLY LISTED | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SPECIALTY APPLICATIONS | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PVC WELDING | 510 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CPVC WELDING | 490 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ABS WELDING | 325 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PLASTIC CEMENT WELDING | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ADHESIVE PRIMER FOR PLASTIC | 550 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CONTACT ADHESIVE | 80 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SPECIAL PURPOSE CONTACT ADHESIVE | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| STRUCTURAL WOOD MEMBER ADHESIVE | 140 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| TOP & TRIM ADHESIVE | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SUBSTRATE SPECIFIC APPLICATIONS | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| METAL TO METAL | 30 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PLASTIC FOAMS | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| POROUS MATERIAL (EXCEPT WOOD) | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| WOOD | 30 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| FIBERGLASS | 80 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.

2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.
www.arb.ca.gov/DRDB/SC/CURHTMLR1168.PDF | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | | <table><tr><th colspan="2">TABLE 5.504.4.2 - SEALANT VOC LIMIT</th></tr><tr><td colspan="2">Less Water and Less Exempt Compounds in Grams per Liter</td></tr><tr><th>SEALANTS</th><th>CURRENT VOC LIMIT</th></tr><tr><td>ARCHITECTURAL</td><td>250</td></tr><tr><td>MARINE DECK</td><td>760</td></tr><tr><td>NONMEMBRANE ROOF</td><td>300</td></tr><tr><td>ROADWAY</td><td>250</td></tr><tr><td>SINGLE-PLY ROOF MEMBRANE</td><td>450</td></tr><tr><td>OTHER</td><td>420</td></tr><tr><th>SEALANT PRIMERS</th><th></th></tr><tr><td>ARCHITECTURAL</td><td></td></tr><tr><td>NONPOROUS</td><td>250</td></tr><tr><td>POROUS</td><td>775</td></tr><tr><td>MODIFIED BITUMINOUS</td><td>500</td></tr><tr><td>MARINE DECK</td><td>760</td></tr><tr><td>OTHER</td><td>750</td></tr><tr><td colspan="2">NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.</td></tr><tr><td colspan="2">5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of <i>California Code of Regulations</i>, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</th></tr><tr><td colspan="2">GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS</td></tr><tr><th>COATING CATEGORY</th><th>CURRENT VOC LIMIT</th></tr><tr><td>FLAT COATINGS</td><td>50</td></tr><tr><td>NONFLAT COATINGS</td><td>100</td></tr><tr><td>NONFLAT HIGH GLOSS COATINGS</td><td>150</td></tr><tr><th>SPECIALTY COATINGS</th><th></th></tr><tr><td>ALUMINUM ROOF COATINGS</td><td>400</td></tr><tr><td>BASEMENT SPECIALTY COATINGS</td><td>400</td></tr><tr><td>BITUMINOUS ROOF COATINGS</td><td>50</td></tr><tr><td>BITUMINOUS ROOF PRIMERS</td><td>350</td></tr><tr><td>BOND BREAKERS</td><td>350</td></tr><tr><td>CONCRETE CURING COMPOUNDS</td><td>350</td></tr><tr><td>CONCRETE/MASONRY SEALERS</td><td>100</td></tr><tr><td>DRIVEWAY SEALERS</td><td>50</td></tr><tr><td>DRY FOG COATINGS</td><td>150</td></tr><tr><td>FAUX FINISHING COATINGS</td><td>350</td></tr><tr><td>FIRE RESISTIVE COATINGS</td><td>350</td></tr><tr><td>FLOOR COATINGS</td><td>100</td></tr><tr><td>FORM-RELEASE COMPOUNDS</td><td>250</td></tr><tr><td>GRAPHIC ARTS COATINGS (SIGN PAINTS)</td><td>500</td></tr><tr><td>HIGH-TEMPERATURE COATINGS</td><td>420</td></tr><tr><td>INDUSTRIAL MAINTENANCE COATINGS</td><td>250</td></tr><tr><td>LOW SOLIDS COATINGS¹</td><td>120</td></tr><tr><td>MAGNESITE CEMENT COATINGS</td><td>450</td></tr><tr><td>MASTIC TEXTURE COATINGS</td><td>100</td></tr><tr><td>METALLIC PIGMENTED COATINGS</td><td>500</td></tr><tr><td>MULTICOLOR COATINGS</td><td>250</td></tr><tr><td>PRETREATMENT WASH PRIMERS</td><td>420</td></tr><tr><td>PRIMERS, SEALERS, & UNDERCOATERS</td><td>100</td></tr><tr><td>REACTIVE PENETRATING SEALERS</td><td>350</td></tr><tr><td>RECYCLED COATINGS</td><td>250</td></tr><tr><td>ROOF COATINGS</td><td>50</td></tr><tr><td>RUST PREVENTATIVE COATINGS</td><td>250</td></tr><tr><td>SHELLACS:</td><td></td></tr><tr><td>CLEAR</td><td>730</td></tr><tr><td>OPAQUE</td><td>550</td></tr><tr><td>SPECIALTY PRIMERS, SEALERS & UNDERCOATERS</td><td>100</td></tr><tr><td>STAINS</td><td>250</td></tr><tr><td>STONE CONSOLIDANTS</td><td>450</td></tr><tr><td>SWIMMING POOL COATINGS</td><td>340</td></tr><tr><td>TRAFFIC MARKING COATINGS</td><td>100</td></tr><tr><td>TUB & TILE REFINISH COATINGS</td><td>420</td></tr><tr><td>WATERPROOFING MEMBRANES</td><td>250</td></tr><tr><td>WOOD COATINGS</td><td>275</td></tr><tr><td>WOOD PRESERVATIVES</td><td>350</td></tr><tr><td>ZINC-RICH PRIMERS</td><td>340</td></tr><tr><td colspan="2">1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.</td></tr><tr><td colspan="2">5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers</td></tr><tr><td colspan="2">5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product
Database.</td></tr><tr><td colspan="2">5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</td></tr><tr><td colspan="2">5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</td></tr><tr><td colspan="2">5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.</td></tr><tr><td colspan="2">5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated
display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table></td></tr></table></td></tr></table>
 | TABLE 5.504.4.2 - SEALANT VOC LIMIT | | Less Water and Less Exempt Compounds in Grams per Liter | | SEALANTS | CURRENT VOC LIMIT | ARCHITECTURAL | 250 | MARINE DECK | 760 | NONMEMBRANE ROOF | 300 | ROADWAY | 250 | SINGLE-PLY ROOF MEMBRANE | 450 | OTHER | 420 | SEALANT PRIMERS | | ARCHITECTURAL | | NONPOROUS | 250 | POROUS | 775 | MODIFIED BITUMINOUS | 500 | MARINE DECK
 | 760 | OTHER | 750 | NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168. | | 5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of <i>California Code of Regulations</i> , Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49. | | | | | <table><tr><th colspan="2">TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</th></tr><tr><td colspan="2">GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS</td></tr><tr><th>COATING CATEGORY</th><th>CURRENT VOC LIMIT</th></tr><tr><td>FLAT COATINGS</td><td>50</td></tr><tr><td>NONFLAT COATINGS</td><td>100</td></tr><tr><td>NONFLAT HIGH GLOSS COATINGS</td><td>150</td></tr><tr><th>SPECIALTY COATINGS</th><th></th></tr><tr><td>ALUMINUM ROOF COATINGS</td><td>400</td></tr><tr><td>BASEMENT SPECIALTY COATINGS</td><td>400</td></tr><tr><td>BITUMINOUS ROOF COATINGS</td><td>50</td></tr><tr><td>BITUMINOUS ROOF
PRIMERS</td><td>350</td></tr><tr><td>BOND BREAKERS</td><td>350</td></tr><tr><td>CONCRETE CURING COMPOUNDS</td><td>350</td></tr><tr><td>CONCRETE/MASONRY SEALERS</td><td>100</td></tr><tr><td>DRIVEWAY SEALERS</td><td>50</td></tr><tr><td>DRY FOG COATINGS</td><td>150</td></tr><tr><td>FAUX FINISHING COATINGS</td><td>350</td></tr><tr><td>FIRE RESISTIVE COATINGS</td><td>350</td></tr><tr><td>FLOOR COATINGS</td><td>100</td></tr><tr><td>FORM-RELEASE COMPOUNDS</td><td>250</td></tr><tr><td>GRAPHIC ARTS COATINGS (SIGN PAINTS)</td><td>500</td></tr><tr><td>HIGH-TEMPERATURE COATINGS</td><td>420</td></tr><tr><td>INDUSTRIAL MAINTENANCE COATINGS</td><td>250</td></tr><tr><td>LOW SOLIDS COATINGS¹</td><td>120</td></tr><tr><td>MAGNESITE CEMENT COATINGS</td><td>450</td></tr><tr><td>MASTIC TEXTURE COATINGS</td><td>100</td></tr><tr><td>METALLIC PIGMENTED COATINGS</td><td>500</td></tr><tr><td>MULTICOLOR COATINGS</td><td>250</td></tr><tr><td>PRETREATMENT WASH PRIMERS</td><td>420</td></tr><tr><td>PRIMERS, SEALERS, & UNDERCOATERS</td><td>100</td></tr><tr><td>REACTIVE PENETRATING SEALERS</td><td>350</td></tr><tr><td>RECYCLED COATINGS</td><td>250</td></tr><tr><td>ROOF COATINGS</td><td>50</td></tr><tr><td>RUST PREVENTATIVE COATINGS</td><td>250</td></tr><tr><td>SHELLACS:</td><td></td></tr><tr><td>CLEAR</td><td>730</td></tr><tr><td>OPAQUE</td><td>550</td></tr><tr><td>SPECIALTY PRIMERS, SEALERS & UNDERCOATERS</td><td>100</td></tr><tr><td>STAINS</td><td>250</td></tr><tr><td>STONE CONSOLIDANTS</td><td>450</td></tr><tr><td>SWIMMING POOL COATINGS</td><td>340</td></tr><tr><td>TRAFFIC MARKING COATINGS</td><td>100</td></tr><tr><td>TUB & TILE REFINISH COATINGS</td><td>420</td></tr><tr><td>WATERPROOFING MEMBRANES</td><td>250</td></tr><tr><td>WOOD COATINGS</td><td>275</td></tr><tr><td>WOOD PRESERVATIVES</td><td>350</td></tr><tr><td>ZINC-RICH PRIMERS</td><td>340</td></tr><tr><td colspan="2">1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.</td></tr><tr><td colspan="2">5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers</td></tr><tr><td colspan="2">5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.</td></tr><tr><td colspan="2">5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</td></tr><tr><td colspan="2">5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</td></tr><tr><td colspan="2">5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.</td></tr><tr><td colspan="2">5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new
construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be
performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table></td></tr></table> | TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS ^{2,3} | | GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS | | COATING CATEGORY | CURRENT VOC LIMIT | FLAT COATINGS | 50 | NONFLAT COATINGS | 100 | NONFLAT HIGH GLOSS COATINGS | 150 | SPECIALTY COATINGS | | ALUMINUM ROOF COATINGS | 400 | BASEMENT SPECIALTY COATINGS | 400 | BITUMINOUS ROOF COATINGS | 50 | BITUMINOUS ROOF PRIMERS | 350 | BOND BREAKERS | 350 | CONCRETE CURING COMPOUNDS | 350 | CONCRETE/MASONRY SEALERS | 100 | DRIVEWAY SEALERS | 50 | DRY FOG COATINGS | 150 | FAUX FINISHING COATINGS | 350

 | FIRE RESISTIVE COATINGS | 350 | FLOOR COATINGS | 100 | FORM-RELEASE COMPOUNDS | 250 | GRAPHIC ARTS COATINGS (SIGN PAINTS) | 500 | HIGH-TEMPERATURE COATINGS | 420 | INDUSTRIAL MAINTENANCE COATINGS | 250 | LOW SOLIDS COATINGS ¹ | 120 | MAGNESITE CEMENT COATINGS | 450 | MASTIC TEXTURE COATINGS | 100 | METALLIC PIGMENTED COATINGS | 500 | MULTICOLOR COATINGS | 250 | PRETREATMENT WASH PRIMERS | 420 | PRIMERS, SEALERS, & UNDERCOATERS
 | 100 | REACTIVE PENETRATING SEALERS | 350 | RECYCLED COATINGS | 250 | ROOF COATINGS | 50 | RUST PREVENTATIVE COATINGS | 250 | SHELLACS: | | CLEAR | 730

 | OPAQUE | 550

 | SPECIALTY PRIMERS, SEALERS & UNDERCOATERS | 100 | STAINS | 250 | STONE CONSOLIDANTS | 450 | SWIMMING POOL COATINGS | 340 | TRAFFIC MARKING COATINGS | 100 | TUB & TILE REFINISH COATINGS | 420 | WATERPROOFING MEMBRANES | 250 | WOOD COATINGS | 275 | WOOD PRESERVATIVES | 350 | ZINC-RICH PRIMERS | 340 | 1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD. | | 5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers | | 5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.
 | | 5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. | | 5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1. | | 5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5. | | 5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency. | | |
 | | <table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain
Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table> | TABLE 5.504.4.5 - FORMALDEHYDE LIMITS ¹ | | MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION | | PRODUCT | CURRENT LIMIT | HARDWOOD PLYWOOD VENEER CORE | 0.05 | HARDWOOD PLYWOOD COMPOSITE CORE | 0.05 | PARTICLE BOARD | 0.09 | MEDIUM DENSITY FIBERBOARD | 0.11 | THIN MEDIUM DENSITY FIBERBOARD ² | 0.13 | 1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM). | | 5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient
Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. | | 5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. | | SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. | | SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i> , or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i> , Section 120(c)(4). | | SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L _w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L _w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L _w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf . | | SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and potentially other refrigerants. | | | | | 5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or
more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. | CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS | | | 702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. | 703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| TABLE 5.504.4.2 - SEALANT VOC LIMIT | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| Less Water and Less Exempt Compounds in Grams per Liter | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SEALANTS | CURRENT VOC LIMIT | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ARCHITECTURAL | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MARINE DECK | 760 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| NONMEMBRANE ROOF | 300 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ROADWAY | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SINGLE-PLY ROOF MEMBRANE | 450 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| OTHER | 420 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SEALANT PRIMERS | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ARCHITECTURAL | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| NONPOROUS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| POROUS | 775 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MODIFIED BITUMINOUS | 500 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MARINE DECK | 760 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| OTHER | 750 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of <i>California Code of Regulations</i> , Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | | <table><tr><th colspan="2">TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</th></tr><tr><td colspan="2">GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS</td></tr><tr><th>COATING CATEGORY</th><th>CURRENT VOC LIMIT</th></tr><tr><td>FLAT COATINGS</td><td>50</td></tr><tr><td>NONFLAT COATINGS</td><td>100</td></tr><tr><td>NONFLAT HIGH GLOSS COATINGS</td><td>150</td></tr><tr><th>SPECIALTY COATINGS</th><th></th></tr><tr><td>ALUMINUM ROOF COATINGS</td><td>400</td></tr><tr><td>BASEMENT SPECIALTY COATINGS</td><td>400</td></tr><tr><td>BITUMINOUS ROOF COATINGS</td><td>50</td></tr><tr><td>BITUMINOUS ROOF PRIMERS</td><td>350</td></tr><tr><td>BOND BREAKERS</td><td>350</td></tr><tr><td>CONCRETE CURING COMPOUNDS</td><td>350</td></tr><tr><td>CONCRETE/MASONRY SEALERS</td><td>100</td></tr><tr><td>DRIVEWAY SEALERS</td><td>50</td></tr><tr><td>DRY FOG COATINGS</td><td>150</td></tr><tr><td>FAUX FINISHING COATINGS</td><td>350</td></tr><tr><td>FIRE RESISTIVE COATINGS</td><td>350</td></tr><tr><td>FLOOR COATINGS</td><td>100</td></tr><tr><td>FORM-RELEASE COMPOUNDS</td><td>250</td></tr><tr><td>GRAPHIC ARTS COATINGS (SIGN PAINTS)</td><td>500</td></tr><tr><td>HIGH-TEMPERATURE COATINGS</td><td>420</td></tr><tr><td>INDUSTRIAL MAINTENANCE COATINGS</td><td>250</td></tr><tr><td>LOW SOLIDS COATINGS¹</td><td>120</td></tr><tr><td>MAGNESITE CEMENT COATINGS</td><td>450</td></tr><tr><td>MASTIC TEXTURE COATINGS</td><td>100</td></tr><tr><td>METALLIC PIGMENTED COATINGS</td><td>500</td></tr><tr><td>MULTICOLOR COATINGS</td><td>250</td></tr><tr><td>PRETREATMENT WASH PRIMERS</td><td>420</td></tr><tr><td>PRIMERS, SEALERS, & UNDERCOATERS</td><td>100</td></tr><tr><td>REACTIVE PENETRATING SEALERS</td><td>350</td></tr><tr><td>RECYCLED COATINGS</td><td>250</td></tr><tr><td>ROOF COATINGS</td><td>50</td></tr><tr><td>RUST PREVENTATIVE COATINGS</td><td>250</td></tr><tr><td>SHELLACS:</td><td></td></tr><tr><td>CLEAR</td><td>730</td></tr><tr><td>OPAQUE</td><td>550</td></tr><tr><td>SPECIALTY PRIMERS, SEALERS & UNDERCOATERS</td><td>100</td></tr><tr><td>STAINS</td><td>250</td></tr><tr><td>STONE CONSOLIDANTS</td><td>450</td></tr><tr><td>SWIMMING POOL COATINGS</td><td>340</td></tr><tr><td>TRAFFIC MARKING COATINGS</td><td>100</td></tr><tr><td>TUB & TILE REFINISH COATINGS</td><td>420</td></tr><tr><td>WATERPROOFING MEMBRANES</td><td>250</td></tr><tr><td>WOOD COATINGS</td><td>275</td></tr><tr><td>WOOD PRESERVATIVES</td><td>350</td></tr><tr><td>ZINC-RICH PRIMERS</td><td>340</td></tr><tr><td colspan="2">1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.</td></tr><tr><td colspan="2">5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers</td></tr><tr><td colspan="2">5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.</td></tr><tr><td colspan="2">5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</td></tr><tr><td colspan="2">5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</td></tr><tr><td colspan="2">5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.</td></tr><tr><td colspan="2">5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.</td></tr><tr><td></td><td></td><td></td><td><table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS,
TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc
shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table></td></tr></table>
 | TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS ^{2,3} | | GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS | | COATING CATEGORY | CURRENT VOC LIMIT | FLAT COATINGS | 50 | NONFLAT COATINGS | 100 | NONFLAT HIGH GLOSS COATINGS | 150 | SPECIALTY COATINGS | | ALUMINUM ROOF COATINGS | 400 | BASEMENT SPECIALTY COATINGS | 400 | BITUMINOUS ROOF COATINGS | 50 | BITUMINOUS ROOF PRIMERS | 350 | BOND BREAKERS | 350 | CONCRETE CURING COMPOUNDS | 350 | CONCRETE/MASONRY SEALERS | 100 | DRIVEWAY SEALERS
 | 50 | DRY FOG COATINGS | 150 | FAUX FINISHING COATINGS | 350 | FIRE RESISTIVE COATINGS | 350 | FLOOR COATINGS | 100 | FORM-RELEASE COMPOUNDS | 250

 | GRAPHIC ARTS COATINGS (SIGN PAINTS) | 500 | HIGH-TEMPERATURE COATINGS | 420 | INDUSTRIAL MAINTENANCE COATINGS | 250 | LOW SOLIDS COATINGS ¹ | 120 | MAGNESITE CEMENT COATINGS | 450 | MASTIC TEXTURE COATINGS | 100 | METALLIC PIGMENTED COATINGS | 500 | MULTICOLOR COATINGS | 250 | PRETREATMENT WASH PRIMERS | 420 | PRIMERS, SEALERS, & UNDERCOATERS | 100 | REACTIVE PENETRATING SEALERS | 350 | RECYCLED COATINGS | 250 | ROOF COATINGS | 50 | RUST PREVENTATIVE COATINGS | 250 | SHELLACS: | | CLEAR | 730 | OPAQUE | 550

 | SPECIALTY PRIMERS, SEALERS & UNDERCOATERS | 100 | STAINS | 250 | STONE CONSOLIDANTS | 450 | SWIMMING POOL COATINGS | 340 | TRAFFIC MARKING COATINGS | 100 | TUB & TILE REFINISH COATINGS | 420 | WATERPROOFING MEMBRANES | 250 | WOOD COATINGS | 275 | WOOD PRESERVATIVES | 350 | ZINC-RICH PRIMERS | 340 | 1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD. | | 5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers | | 5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1.
Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database. | | 5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. | | 5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1. | | 5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5. | | 5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency. | | | | | <table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise
environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this
code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table> | TABLE 5.504.4.5 - FORMALDEHYDE LIMITS ¹ |

 | MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION | | PRODUCT | CURRENT LIMIT | HARDWOOD PLYWOOD VENEER CORE | 0.05 | HARDWOOD PLYWOOD COMPOSITE CORE | 0.05 | PARTICLE BOARD | 0.09 | MEDIUM DENSITY FIBERBOARD | 0.11 | THIN MEDIUM DENSITY FIBERBOARD ² | 0.13 | 1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM). | | 5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. | | 5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. | | SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. | | SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i> , or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i> , Section 120(c)(4). | | SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L _w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L _w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L _w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or
5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf . | | SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and potentially other refrigerants. | | | | | 5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. | CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS | | | 702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be
independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. | 703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist. |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS ^{2,3} | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| COATING CATEGORY | CURRENT VOC LIMIT | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| FLAT COATINGS | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| NONFLAT COATINGS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| NONFLAT HIGH GLOSS COATINGS | 150 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SPECIALTY COATINGS | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ALUMINUM ROOF COATINGS | 400 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| BASEMENT SPECIALTY COATINGS | 400 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| BITUMINOUS ROOF COATINGS | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| BITUMINOUS ROOF PRIMERS | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| BOND BREAKERS | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CONCRETE CURING COMPOUNDS | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CONCRETE/MASONRY SEALERS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| DRIVEWAY SEALERS | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| DRY FOG COATINGS | 150 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| FAUX FINISHING COATINGS | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| FIRE RESISTIVE COATINGS | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| FLOOR COATINGS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| FORM-RELEASE COMPOUNDS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| GRAPHIC ARTS COATINGS (SIGN PAINTS) | 500 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| HIGH-TEMPERATURE COATINGS | 420 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| INDUSTRIAL MAINTENANCE COATINGS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| LOW SOLIDS COATINGS ¹ | 120 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MAGNESITE CEMENT COATINGS | 450 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MASTIC TEXTURE COATINGS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| METALLIC PIGMENTED COATINGS | 500 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MULTICOLOR COATINGS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PRETREATMENT WASH PRIMERS | 420 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PRIMERS, SEALERS, & UNDERCOATERS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| REACTIVE PENETRATING SEALERS | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| RECYCLED COATINGS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ROOF COATINGS | 50 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| RUST PREVENTATIVE COATINGS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SHELLACS: | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CLEAR | 730 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| OPAQUE | 550 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SPECIALTY PRIMERS, SEALERS & UNDERCOATERS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| STAINS | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| STONE CONSOLIDANTS | 450 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SWIMMING POOL COATINGS | 340 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| TRAFFIC MARKING COATINGS | 100 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| TUB & TILE REFINISH COATINGS | 420 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| WATERPROOFING MEMBRANES | 250 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| WOOD COATINGS | 275 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| WOOD PRESERVATIVES | 350 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| ZINC-RICH PRIMERS | 340 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | | <table><tr><th colspan="2">TABLE 5.504.4.5 - FORMALDEHYDE LIMITS¹</th></tr><tr><td colspan="2">MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION</td></tr><tr><th>PRODUCT</th><th>CURRENT LIMIT</th></tr><tr><td>HARDWOOD PLYWOOD VENEER CORE</td><td>0.05</td></tr><tr><td>HARDWOOD PLYWOOD COMPOSITE CORE</td><td>0.05</td></tr><tr><td>PARTICLE BOARD</td><td>0.09</td></tr><tr><td>MEDIUM DENSITY FIBERBOARD</td><td>0.11</td></tr><tr><td>THIN MEDIUM DENSITY FIBERBOARD²</td><td>0.13</td></tr><tr><td colspan="2">1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).</td></tr><tr><td colspan="2">5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</td></tr><tr><td colspan="2">5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.</td></tr><tr><td colspan="2">SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.</td></tr><tr><td colspan="2">SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i>, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i>, Section 120(c)(4).</td></tr><tr><td colspan="2">SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L_w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L_w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method.
For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf.</td></tr><tr><td colspan="2">SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.</td></tr><tr><td></td><td></td><td></td><td>5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</td></tr><tr><td colspan="3">CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS</td><td>702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to
the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.</td></tr><tr><td colspan="3">703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.</td><td></td></tr></table>
 | TABLE 5.504.4.5 - FORMALDEHYDE LIMITS ¹ | | MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION | | PRODUCT | CURRENT LIMIT | HARDWOOD PLYWOOD VENEER CORE | 0.05 | HARDWOOD PLYWOOD COMPOSITE CORE | 0.05 | PARTICLE BOARD | 0.09 | MEDIUM DENSITY FIBERBOARD | 0.11 | THIN MEDIUM DENSITY FIBERBOARD ² | 0.13 | 1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM). | | 5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. | | 5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. | | SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. | | SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i> , or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i> , Section 120(c)(4). | | SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L _w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L _w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L _w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf . | | SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and potentially other refrigerants. | | | |
 | 5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. | CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS | | | 702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. | 703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist. |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| TABLE 5.504.4.5 - FORMALDEHYDE LIMITS ¹ | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PRODUCT | CURRENT LIMIT | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| HARDWOOD PLYWOOD VENEER CORE | 0.05 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| HARDWOOD PLYWOOD COMPOSITE CORE | 0.05 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| PARTICLE BOARD | 0.09 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| MEDIUM DENSITY FIBERBOARD | 0.11 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| THIN MEDIUM DENSITY FIBERBOARD ² | 0.13 | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM). | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SECTION 5.505 INDOOR MOISTURE CONTROL
5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SECTION 5.506 INDOOR AIR QUALITY
5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the <i>California Energy Code</i> , or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO₂) MONITORING. For buildings or additions equipped with demand control ventilation, CO ₂ sensors and ventilation controls shall be specified and installed in accordance with the requirements of the <i>California Energy Code</i> , Section 120(c)(4). | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SECTION 5.507 ENVIRONMENTAL COMFORT
5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

Exceptions:

1. L _w or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
2. L _w or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L _w noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L _w - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbox.org/PDF/CaseStudies/stc_icc_ratings.pdf . | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| SECTION 5.508 OUTDOOR AIR QUALITY
5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO ₂), and potentially other refrigerants. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| | | | 5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 500 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS | | | 702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |
| 703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist. | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |

 | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | |
 | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 | | | | | | | | | | | | | | | | | | | | | | | | |
 | | | | | | | | | | | | |
 | | | | |