

This is a guidance document with sample specification language intended to be inserted into project specifications on this subject as appropriate to the agency's environmental goals. Certain provisions, where indicated, are required for U.S. federal agency projects. Sample specification language is numbered to clearly distinguish it from advisory or discussion material. Each sample is preceded by identification of the typical location in a specification section where it would appear using the SectionFormat™ of the Construction Specifications Institute; the six digit section number cited is per CSI Masterformat™ 2004 and the five digit section number cited parenthetically is per CSI Masterformat™ 1995.

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## SECTION 06 05 73 (SECTION 06070) – WOOD TREATMENT

### SPECIFIER NOTE:

*resource management* Some species of wood are naturally resistant to decay caused by the elements while others are resistant to termite attack. These include the following species whose heartwood is commonly recognized by the building codes are resistant to decay: black locust, cedar, and black walnut. Redwood and Eastern red cedar are resistant to termites.

*toxicity/IEQ:* Lumber, timber, wood structural panels, piles and poles supporting permanent structures are often required by building codes to be preservative treated in accordance with the requirements of an applicable American Wood-Preservers Association (AWPA) standard for the species, product, preservative and end use.

There are three broad classes of wood preservatives: (1) creosote, which is generally used in rail-road ties, utility poles, and pilings; (2) oil-borne preservatives, such as pentachlorophenol and copper naphthenate, generally used for utility poles, assembly area roof supports and glu-lam construction; and, (3) waterborne preservatives which are the most common preservatives used in residential, commercial and industrial construction. Waterborne preservatives include: ammoniacal copper arsenate (ACA), alkaline copper quaternary (ACQ-B and ACQ-D), ammoniacal copper zinc arsenate (ACZA), chromated copper arsenate (CCA), copper boron azole (CBA-A and CA-B), and copper naphthenate, sodium borate (SBX),. Chlorothalonil is also used as a fungicide to control fungal diseases on trees and crops..

In use, wood preservatives are usually of fairly low volatility, but may outgas over time. While their emissions rates are not large and they do not generally result in high indoor air concentrations, some may pose health hazards. CCA has been the most common waterborne preservative treatment. However, on February 12, 2002, EPA announced a voluntary decision by industry to move consumer use of treated lumber products away from preservatives that contains arsenic by December 31, 2003, in favor of preservatives that do not contain arsenic for most residential uses. This transition affects preservative-treated wood used in play-structures, decks, picnic tables, landscaping timbers, residential fencing, patios and walkways/boardwalks. As of January 1, 2004, EPA does not allow CCA to be used to treat wood intended for any of these residential uses. This decision on CCA, however, does not restrict the use of CCA preservative-treated wood for pilings, permanent wood foundations and similar applications.

*performance:* Wood preservatives are used to make wood resistant to fungus growth and termite attack. Most building codes require that structural wood elements in direct contact with earth, embedded in concrete/masonry that is in direct contact with earth, or exposed to moisture, be of naturally durable wood or preservative-treated wood. Where alternative products or systems are used, a variance from the building department may be required.

Do not specify wood furnishings or finishes that require tight humidity controls of the mechanical systems. Comfort standards typically allow humidity to fluctuate to save energy costs.

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes:

1. Wood Treatment.
  2. Natural Decay and Insect Resistant Wood.
- B. Related Sections:
1. 06 10 00 (06100) – Rough Carpentry.
  2. 06 16 00 (06160) – Sheathing.

## 1.2 SUBMITTALS

- A. Product data. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

### SPECIFIER NOTE:

Specifying local materials may help minimize transportation impacts; however it may not have a significant impact on reducing the overall embodied energy of a building material because of efficiencies of scale in some modes of transportation.

Green building rating systems frequently include credit for local materials. Transportation impacts include: fossil fuel consumption, air pollution, and labor.

USGBC-LEED™ v3 includes credits for materials extracted/harvested and manufactured within a 500 mile radius from the project site. Green Globes US also provides points for materials that are locally manufactured.

1. Local/Regional Materials:
  - a. Sourcing location(s): Indicate location of extraction, harvesting, and recovery; indicate distance between extraction, harvesting, and recovery and the project site.
  - b. Manufacturing location(s): Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.
  - c. Product Value: Indicate dollar value of product containing local/regional materials; include materials cost only.
  - d. Product Component(s) Value: Where product components are sourced or manufactured in separate locations, provide location information for each component. Indicate the percentage by weight of each component per unit of product.

### SPECIFIER NOTE:

Green building rating systems may include credit for low emitting materials. USGBC-LEED™ v3, for example, includes credits for low-emitting materials, including: adhesives and sealants, paints and coatings, carpets, and composite wood and agrifiber products. Under LEED™ v3, adhesives and sealants are to comply with California's South Coast Air Quality Management District (SCAQMD) #1168; aerosol adhesives are to comply with Green Seal GS-36; interior architectural paints are to comply with Green Seal GS-11; anti-corrosive paints are to comply with Green Seal GS-03 (note – Green Seal has withdrawn GS-03; as of November 2008, anti-corrosive paints are included in a revised GS-11); clear wood finishes are to comply with SCAQMD #1113; carpet with the Carpet and Rug Institute (CRI) Green Label Plus; carpet cushion with CRI Green Label program; and, composite wood and agrifiber products are to contain no added urea-formaldehyde.

As per USGBC published Credit Interpretations, the credits for low-emitting materials are directed towards interior, site-installed (i.e. not prefabricated) products. Verify project requirements for low VOC roofing products.

Both the Adhesive and Sealant Council (ASC) and the SCAQMD have indicated that low VOC adhesives may have performance difficulties in extreme temperature and humidity conditions.

Green Seal, an independent, non-profit organization, certifies low-emitting products using internationally recognized methods and procedures. Green Seal certification meets the criteria of ISO 14020 and 14024, the environmental standards for ecolabeling set by the International Organization for Standardization (ISO); the U.S. Environmental Protection Agency's criteria for third-party certifiers of environmentally preferable products; and the criteria for bona fide ecolabeling bodies of the Global Ecolabeling Network.

Engineered wood products manufactured in accordance with ANSI standards are also available. For example, the Composite Panel Association's (CPA's) Standard for Particleboard, ANSI A208.1, includes maximum formaldehyde emissions for different grades of particleboard; ANSI A208.2, the Composite Panel Association's Standard for MDF, covers MDF for interior applications and includes maximum formaldehyde emission level for different grades of MDF.

2. VOC data:
  - a. Adhesives:
    - 1) Submit manufacturer's product data for adhesives. Indicate VOC limits of the product. Submit MSDS highlighting VOC limits.
    - 2) Submit Green Seal Certification to GS-36 and description of the basis for certification.
    - 3) **[Submit manufacturer's certification that products comply with SCAQMD #1168.] [Submit manufacturer's certification that products comply with SCAQMD Rule 1168 in areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur. In areas where freeze/thaw conditions do exist or direct exposure to moisture can occur, submit manufacturer's certification that products comply with Bay Area AQMD Reg. 8, Rule 51 for containers larger than 16 oz and with California Air Resources Board (CARB) for containers 16 oz or less.]**
  - b. Engineered Wood Products: Provide documentation that composite wood and agrifiber products **[are third-party certified as meeting ANSI standard requirements for formaldehyde emissions] [contain no added urea-formaldehyde resins.]**
    - 1) ANSI A208.1 – 1999, Particleboard
    - 2) ANSI A208.2 – 2002, Medium Density Fiberboard (MDF) for Interior Applications

**SPECIFIER NOTE:**

Green building rating systems typically include credit for sustainably harvested wood. USGBC-LEED™ v3, for example, includes credit for use of sustainably harvested wood certified under Forest Stewardship Council Guidelines. Under LEED™ v3, a minimum of 50 percent of wood-based materials and products incorporated into the Project must be certified in accordance with the Forest Stewardship Council Guidelines.

Green Globes US also provides points for wood products that originate from certified sources, such as, Forest Stewardship Council, Sustainable Forestry Initiative, and the CSA Sustainable Forest Management Program.

- B. Letter of Certification(s) for Sustainable Forestry:
  1. Forest Stewardship Council (FSC): Provide letter of certification signed by lumber supplier. Indicate compliance with FSC "Principles for Natural Forest Management" and identify certifying organization.
    - a. Submit FSC certification numbers; identify each certified product on a line-item basis.
    - b. Submit copies of invoices bearing the FSC certification numbers.
  2. Sustainable Forestry Board: Provide letter of certification signed by lumber supplier. Indicate compliance with the Sustainable Forestry Board's Sustainable Forestry Initiative (SFI) and identify certifying organization.
    - a. Submit SFI certification numbers; identify each certified product on a line-item basis.
    - b. Submit copies of invoices bearing the SFI certification numbers.

3. Canadian Standards Association (CSA): Provide letter of certification signed by lumber supplier. Indicate compliance with the CSA and identify certifying organization.
  - a. Submit CSA certification numbers; identify each certified product on a line-item basis.
  - b. Submit copies of invoices bearing the CSA certification numbers.
- C. Letter of Certification for Pressure Treatment: Submit Certification from treating plant stating chemicals and process used and net amount of preservatives retained are in conformance with specified standards.

## PART 2 - PRODUCTS

### SPECIFIER NOTE:

EO 13423 includes requirements for Federal Agencies to reduce “the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of by the agency”; and, EO 13423 includes requirements for Federal Agencies to use “sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products”

Specifically, for USDA-designated biobased products, Federal agencies must use products meeting or exceeding USDA’s biobased content recommendations; and for other products, biobased products made from rapidly renewable resources and certified sustainable wood products.

And, under the Sustainable Building requirements per Guiding Principle #4 Enhance Indoor Environmental Quality, EO13423 directs Federal agencies to use “materials and products with low pollutant emissions, including adhesives, sealants, paints, carpet systems, and furnishings.”

Executive Order 13514; *Federal Leadership in Environmental, Energy, and Economic Performance*; was signed on October 5, 2009. <http://www.ofee.gov/execorders.asp> It expands upon the environmental performance requirements of EO 13423.

[http://www1.eere.energy.gov/femp/regulations/printable\\_versions/eo13423.html](http://www1.eere.energy.gov/femp/regulations/printable_versions/eo13423.html)

EO 13514 sets numerous federal requirements in several areas, including sustainable buildings and communities. Federal agencies must implement high performance sustainable federal building design, construction, operation and management, maintenance, and deconstruction, including:

- Ensuring all new Federal buildings, entering the design phase in 2020 or later, are designed to achieve zero net energy by 2030.
- Ensuring all new construction, major renovations, or repair or alteration of Federal buildings comply with the Guiding Principles of Federal Leadership in High Performance and Sustainable Buildings <http://www1.eere.energy.gov/femp/pdfs/mouhighperfsustainfedfacs.pdf>
- Ensuring at least 15% of existing agency buildings and leases (above 5,000 gross square feet) meet the Guiding Principles by fiscal year 2015 and that the agency makes annual progress towards 100% compliance across its building inventory.

## 2.1 MATERIALS

- A. Preservative Pressure Treatment:
  1. Toxicity/IEQ: Products containing chromium will not be permitted. Products containing arsenic will not be permitted
  2. Waterborne Wood Preservatives:
    - a. Wood products shall be treated with waterborne wood preservatives conforming to AWPA Standards P5, excluding those which contain arsenic and/or chromium.
    - b. Pressure treatment of wood products shall conform to the requirements of AWPA Standards U1 and T1.

- b. Retention of preservatives:
  - 1) Moderate service conditions (weather exposure): 0.25 pounds per cubic foot (oxide basis).
  - 2) Severe conditions (constant contact with ground or water): 0.40 pounds per cubic foot (oxide basis).

**SPECIFIER NOTE:**

Some preservatives are not recommended for use of wood in direct contact with ground because of the potential for leaching out of the preservative.–For example, AWPA standards prohibit wood treated with borates for use in direct contact with the ground or exposed direct precipitation or continuous exposure to liquid water.

- 3. Borate-based preservative:
  - a. Impregnate lumber with preservative treatment conforming to AWPA Standard P18.
- B. Fire Retardant Treatment:
  - 1. Toxicity/IEQ: Fire-retardant-treated wood products shall be free of halogens, sulfates, ammonium phosphate and formaldehyde.
  - 2. Fire Retardant Formulations:
    - a. Wood products shall be treated with fire retardants conforming to AWPA Standard P17.
    - b. Fire retardant treatment of wood products shall conform to the requirements of AWPA Standard U1, Commodity Specification H and AWPA Standard T1, Section 8.8.
- C. Natural Decay and Insect Resistant Wood:
  - 1. Resource Management: Provide sustainably harvested; certified or labeled in accordance with **[FSC] [SFI] [CSA] [xxxxx]** guidelines. Naturally Durable Wood is the heartwood of the following species with the exception that an occasional piece with corner sapwood is permitted if 90 percent or more of the width of each side on which it occurs is heartwood. Acceptable species include:
    - a. Decay resistant. Redwood, South American ipe, bald cypress, cedar, black locust and black walnut.
    - b. Termite resistant. Redwood and Eastern red cedar.

**PART 3 - EXECUTION**

**3.X SITE ENVIRONMENTAL PROCEDURES**

- A. As specified in Division 01 (1) and Section 06 10 00 (06100) – Rough Carpentry.

**END OF SECTION**