

CHROMATED COPPER ARSENATE (CCA)

Identification



Sample CAA End Tag

General Description

Chromated Copper Arsenate (CCA) contains inorganic arsenic, chromium and copper and is a pesticide registered for use in Canada under the Pest Control Products Act. While CCA was voluntarily removed from the residential application market in 2005, it remains present in the Canadian industrial and agricultural markets. The base ingredients from which CCA treating solutions are made are hexavalent chromium, cupric oxide, arsenic pentoxide and water. Treatment solution concentrations usually range from 2% to 4% by weight depending on the species of wood to be treated and the product's end use.

It is important to note there are significant differences in the chemistry and toxicity of arsenic compounds. Inorganic pentavalent arsenate, one of the primary active ingredients in CCA, is a naturally-occurring trace element which is present in soil, water, air, plants and in the tissues of most living creatures – including humans. It should not be confused with trivalent arsenic compounds, which are generally more toxic than pentavalent compounds and never used in the pressure treating process.

The pentavalent arsenate found in wood preservatives is also the most prevalent arsenic compound in nature. It is rapidly excreted by the kidneys and does not accumulate. Again, it is important to note that chronic inorganic arsenic intoxication is associated with trivalent arsenic, which is not present in CCA solutions.

The chemical reactions that fix the CCA components in the wood are complex. For example, in general terms, the pressure-injected chemicals in CCA are reduced to their metallic state and become bonded to the cellular structure of the wood. These highly insoluble precipitates are virtually immune to leaching (seeping from the wood) and will not vaporize or evaporate under normal conditions.

Many of the allegations about CCA wood preservative are anecdotal and groundless. To date, all evidence collected on the toxicity of CCA treated wood shows no health hazard, even by very exaggerated contact to treated wood. (The oral lethal dose of treated wood for

a 70 kg human would be more than half a kg. Even then it might not prove fatal, because the digestive system would likely be unable to liberate all the arsenic from the wood.) Studies show that properly impregnated wood retains its CCA preservatives in virtually undiminished quantities for decades. Environmental risks from properly processed CCA treated wood are negligible.

CCA treated wood is light green in colour and weathers to a driftwood grey over time. Seasoning after treatment leaves the wood dry, paintable, odorless and clean. This is preferred for applications where there is close human or animal contact. Water repellents, colour, mould inhibitors and additives to improve the climbability of poles can be applied during the treating process. While the oil carriers in penta and creosote impart water repellency to wood in the normal course of treating, CCA do not provide such weathering protection. Applying a water repellent additive during pressure treating slows the initial moisture loss of the wood and reduces shrinkage as the wood comes into equilibrium with the environment. Water repellents also help reduce effects of weathering on wood in use, thereby reducing checking and the rate at which the wood turns grey.

Similarly, colour pigments can be added to the preservative to mask the characteristic soft green of CCA, mould inhibitors can keep wood looking clean in excessive humidity conditions, and various additives can be used to "soften" poles so that they are more easily climbed.

Applications

The PMRA Re-evaluation Note REV2006-07 *Label Guidance for Use of Chromated Copper Arsenate (CCA)* lists the permitted uses of CCA in Canada and is included as a reference.



Chromated Copper Arsenate (CCA) Consumer Safety Information

Exposure to arsenic and chromium may present certain hazards. Follow the safe practices listed below when working with CCA pressure-treated wood. Specific work practices may vary depending on the environment and safety requirements of individual jobs.

Use

Wood treated with CCA should be used only when such protection is important, as in areas where the wood is subject to decay or insect attack or is in contact with damp soil or water. Treated wood is not a substitute for good building design. Proper design and construction principles must be followed to ensure long service and prevent decay. CCA-treated wood should be used in the interior of constructions only when there is a risk of accidental wetting and replacement is difficult (for example, in foundations, basements, ground-floor joists and sub-floors).

Do not use CCA-treated wood where:

- Direct food contact is possible (for example, cutting boards, counter tops, beehives).
- The chemicals in the preservative may enter the food chain (for example, animal feed storage, silos, water troughs, compost bins, mulch).
- The chemicals in the preservative may come into contact with public drinking water (for example, well or reservoir covers), except for uses involving incidental contact such as docks and bridges.

Handling

Only purchase CCA-treated wood that is visibly clean and free of surface residues, as these may contain dislodgeable toxic chemicals.

Wear gloves and long sleeves when handling treated wood.

Wear dust mask, eye protection, gloves and long sleeves when sawing, sanding, shaping or otherwise machining treated wood to avoid skin contact with or inhalation of sawdust.

Where possible, cut or otherwise work with treated wood out-of-doors.

Wash hands after working with the wood, and before eating, drinking, or smoking.

Launder clothing before reuse. Wash separately from other clothing.

After construction, all cut ends, sawdust and construction debris should be cleaned up and disposed of in accordance with local regulations.



Installation and Maintenance

If wood is cut during construction, apply an appropriate "end-cut" preservative (e.g., copper naphthenate for above or below ground or zinc naphthenate for above ground only) to protect exposed, untreated wood. Use these products according to the manufacturers instructions.

The service life of CCA-treated wood may be extended by regular application of coating or sealer, which can protect the wood from weathering effects. Such maintenance may also reduce the potential release of toxic chemicals from the wood.

The use of bleaches, deck cleaners or brighteners that contain sodium hypochlorite, sodium hydroxide, sodium percarbonate, oxalic acid, or citric acid is not recommended as they may release toxic chemicals from CCA-treated wood.

Use corrosion-resistant fasteners to minimize damage and discoloration caused by moisture.

Disposal

Reuse treated wood to the extent possible.

Do not dispose of CCA-treated wood remnants or sawdust in compost heaps, wood chips, or mulch as chemicals from the preservative may enter the food chain

Dispose of construction wastes or material removed from service in accordance with local regulations. Contact your municipality or provincial government to find out how to dispose of CCA-treated wood in your area. (Most areas use ordinary trash collection or burial.)

NEVER BURN TREATED WOOD. Arsenic and chromium may be released into the environment as part of the smoke or remain in the ashes.

