

PENTACHLOROPHENOL (Penta)

General Description

Penta is the most common oil-borne preservative used industrially for the long-term protection of wood against attack and destruction by fungi and insects. It has been used in Canada for almost half a century.

Oil-borne penta is used extensively for the treatment of utility poles. It is also used for railway ties, foundation piling, timbers in highway construction, construction timbers and poles, and fence posts.

Pure penta is a white, crystalline, aromatic compound. It is produced by reacting phenol with chlorine. Technical penta used in wood preservation usually contains about 10% related chlorophenols such as tetrachlorophenol and some trichlorophenol. It also contains some impurities such as octa-, hepta-, and hexachlorodibenzo-p- dioxins and chlorodibenzofurans at levels of parts per million. It is important to note that the highly toxic tetrachlorodibenzo-p- dioxin (2,3,7,8-TCDD), which has received much attention in the media, has NOT been found in penta.

For wood preservation treatments, pentachlorophenol is dissolved in petroleum oil conforming to CSA 080.20 1 "Standard for Hydrocarbon Solvents for Preservatives". Penta treating solution concentrations range from 3% to 7% by weight, depending on the wood products and species to be treated.

If, through accidental exposure, pentachlorophenol is absorbed, inhaled or ingested, it does not accumulate in the body (the half-life is about 36 hours). Thus, after exposure, penta is released from the body relatively quickly in the urine. Studies carried out on treatment plant workers exposed to penta for up to 20 years show no long-term adverse health effects. Basic, common sense measures make penta safe for use.

While penta treated wood is safe for many uses, plants in direct contact with penta treated wood could be adversely affected. Therefore, it should not be used in greenhouses or next to house and food plants. Nor should it be used in home interiors or salt-water applications.

However, pressure-impregnated penta does not evaporate or exude from wood to an appreciable extent. According to several studies, this is true not only for wood in ground contact, but also for properly treated piling and timbers in fresh water applications. It is also important to note that low concentrations of penta are biodegradable and subject to photodecomposition.

Penta treated wood is light to dark brown in color, depending on the oil used and the species treated, and usually weathers to a silvery gray over time. It is also somewhat water repellent. This improves the wood's dimensional stability and reduces checking and splitting. The wood is also more resistant to mechanical wear. The oil lubricates the wood, facilitating spur penetration when climbing poles.

Oil-borne penta also slows corrosion of metal fasteners. It is resistant to a variety of corrosive chemicals and is a suitable treatment for several types of chemical storage and conduit structures.

Applications

Penta is registered with PMRA for the following wood uses:

- railway ties
- utility poles, and piling
- outdoor construction materials



Pentachlorophenol Consumer Safety Information

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

Use

Wood treated with pentachlorophenol should not be used for log homes.

Wood treated with penta should not be used where it will be in frequent or prolonged contact with bare skin (for example, chairs, and other outdoor furniture), unless an effective sealer has been applied.

Pentachlorophenol-treated wood should not be used in residential, industrial, or commercial interiors except for laminated beams or for building components, which are in ground, contact and are subject to decay or insect infestation and where two coats of an appropriate sealer are applied. Sealers may be applied at the installation site.

Wood treated with pentachlorophenol should not be used in interiors of farm buildings where there may be direct contact with domestic animals or livestock, which may crib (bite) or lick the wood.

Do not use pentachlorophenol-treated wood for farrowing or brooding facilities.

Do not use treated wood under circumstances where the preservatives may become a component of food or animal feed. Examples of such sites would be structures or containers for storing silage or food.

Do not use treated wood for cutting boards or countertops. Only treated wood that is visibly clean and free of surface residue should be used for patios, decks and walkways.

Do not use treated wood for construction of those portions of beehives, which may come into contact with the honey.

Pentachlorophenol-treated wood should not be used where it may come into direct or indirect contact with public drinking water, except for uses involving incidental contact such as docks and bridges.



Handling

Avoid frequent or prolonged inhalation of sawdust from treated wood. When sawing and machining treated wood, wear a dust mask. Whenever possible, these operations should be performed outdoors to avoid indoor accumulations of airborne sawdust from treated wood.

Avoid frequent or prolonged skin contact with pentachlorophenol-treated wood; when handling the treated wood, wear long-sleeved shirts and long pants and use gloves impervious to the chemicals (for example, gloves that are vinyl-coated).

When power sawing and machining, wear goggles to protect eyes from flying particles. After working with the wood, and before eating, drinking, and use of tobacco products, wash exposed areas thoroughly.

If oily preservatives or sawdust accumulate on clothes, launder before reuse. Wash work clothes separately from other household clothing.

Disposal

Dispose of treated wood by ordinary trash collection or burial. Treated wood should not be burned in open fires or in stoves, fireplaces, or residential boilers because toxic chemicals may be produced as part of the smoke and ashes. Treated wood from commercial or industrial use (e.g., construction sites) may be burned only in commercial or industrial incinerators or boilers rated at 20 million BTU/hour or greater heat input or its equivalent in accordance with provincial and federal regulations.

