



# PRESERVE TECH

Guidance for properly specifying and using preserved wood products

## Preservatives for infrastructure products

For more than a century, preservative-treated wood products have been essential to the North American infrastructure. From marine pilings and utility poles to rail ties, bridge timbers and guardrail posts, preserved wood products have served a critical, but often unnoticed role in society.

Preserved wood infrastructure products are subjected to the harshest conditions that nature can dish out, from rain, ice and wind to insects and decay fungi. To provide the maximum protection in these conditions, infrastructure products are often treated with oil-type preservatives, where the oil carrying the preservative into the wood adds to the protection. There are also two waterborne preservatives used for infrastructure products that offer unique protective qualities:

### Oil-Type Preservatives

- CuN - Copper Naphthenate
- Creo - Creosote
- DCOI - 4,5-Dichloro-2-N-Octyl-4-Isothiazolin-3-One
- IPBC - 3-Iodo-2-propynyl butylcarbamate
- Penta - Pentachlorophenol

### Waterborne Preservatives

- ACZA - Ammoniacal Copper Zinc Arsenate
- CCA - Chromated Copper Arsenate

Use the listings below to identify the common species treated, the application conditions and the typical wood products treated.

## Oil-type preservatives

### CuN - Copper Naphthenate

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine  
**Conditions:** Above ground, ground contact, fresh water contact, field treatment

**Products:** Bridge components, dock components, crossarms, fencing, guardrail posts, rail ties, sign posts, sound barriers, utility poles

Copper Naphthenate, also referred to as CuN, is an industrial strength, oil-type wood preservative with proven performance. It has clean handling characteristics and is used for a variety of infrastructure products. Classified by the EPA as a general use preservative, CuN also is widely applied as a field treatment on end cuts or holes bored into pressure-treated wood during construction. Treatment practices for CuN have been refined over the past two decades by manufacturers to ensure wood products provide a long service life in demanding conditions.

### Creo - Creosote

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine, Western Red Cedar, Red Pine  
**Conditions:** Above ground, ground contact, fresh/salt water immersion

**Products:** Bridge components, marine pilings, rail ties, retaining walls, utility poles

Creosote has been successfully used as a preservative for well over a century and today is used predominately in treating rail ties. Creosote-treated wood products have established a record of long-term performance and a reputation for safety and reliability, offering a low total environmental impact. Creosote is supported by various multinational corporations who provide product stewardship through technical and research initiatives.

### DCOI - 4,5-Dichloro-2-N-Octyl-4-Isothiazolin-3-One

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine, Western Red Cedar, Red Pine  
**Conditions:** Above ground, ground contact, fresh water contact

**Products:** Crossarms, utility poles

DCOI is the newest oil-type preservative available for infrastructure. DCOI is a thoroughly tested preservation system, offering a high performance, durable utility poles. Key components in the preservative also are used in Ecolife treated decking and fencing. In addition to wood preservation, DCOI is used in water treatment, paints and coatings, adhesives, vinyl roof membranes, vinyl flooring, marine upholstery and outdoor furniture.

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### Oil-type preservatives *(cont.)*

#### IPBC - 3-Iodo-2-propynyl butylcarbamate

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine  
Western Red Cedar

**Products:** Glu-lams

**Conditions:** Above ground

IPBC is a biocide used as a preservative for glue-laminated wood products and is carried into the wood with hydrocarbon solvents such as mineral spirits. IPBC has been in use since 1975 and can be found in over-the-counter stains and water repellents.

#### Penta - Pentachlorophenol

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine  
Western Red Cedar, Red Pine

**Products:** Bridge components, crossarms, utility poles

**Conditions:** Above ground, ground contact, fresh water contact, salt water splash

Pentachlorophenol is an industrial strength preservative used in wood pole treating since the 1930s. Used extensively in treating Douglas fir utility poles and crossarms, penta has achieved a long record of service performance and safe use. Penta is effective in resisting fungal decay and wood poles treated with penta have been known to last 70 years or more. Penta has historically been dissolved in diesel oil for pressure treating. More recently biodiesel has been used as a carrier for penta. After the sole manufacturer ended production of the preservative, the EPA discontinued the registration for penta in 2021. The agency said it will not allow use of penta after 2027.

### Waterborne preservatives

#### ACZA - Ammoniacal Copper Zinc Arsenate

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine  
Western Red Cedar, Red Pine

**Products:** Bridge components, dock components, crossarms, fencing, guardrail posts, marine pilings, rail ties utility poles

**Conditions:** Above ground, ground contact, fresh/salt water immersion

ACZA is commonly known by its brand name Chemonite. Developed by the University of California in the 1920s, ACZA treatment is particularly effective for hard-to-treat species like Douglas Fir. ACZA preserved wood is often used in aquatic environments, docks, piers and applications where it will be exposed to water. ACZA-treated infrastructure products protect against the major causes of wood degradation: decay and termites (including Formosan), marine organisms, carpenter ants and woodpeckers.

#### CCA - Chromated Copper Arsenate

**Species:** Douglas Fir, Hem-Fir, Southern Yellow Pine  
Western Red Cedar, Red Pine

**Products:** Bridge components, dock components, crossarms, fencing, guardrail posts, marine pilings, rail ties utility poles

**Conditions:** Above ground, ground contact, fresh/salt water immersion

CCA was the predominant waterborne preservative for many decades. It is used today in treating Southern Pine and Western Red Cedar utility poles and crossarms, with an extensive record of durable performance. CCA provides effective protection for infrastructure products because it chemically "fixes" or bonds to the wood, reducing the chances of potential migration of the preservative into the soil or groundwater.

### Additional preservative information

For additional information and safety data sheets (SDS) for each preservative contact the treating manufacturer or go to the following preservative company websites:

<u>Manufacturer</u>	<u>Preservatives</u>	<u>Website</u>
Creosote Council	Creosote	<a href="http://creosotecouncil.org">creosotecouncil.org</a>
Arxada	ACZA, CCA, IPBC	<a href="http://arxada.com/en/wood-protection/americas">arxada.com/en/wood-protection/americas</a>
Koppers Performance Chemicals	CCA, PTI, SBX	<a href="http://kopperspc.com">kopperspc.com</a>
Nisus Corp.	CuN	<a href="http://nisuscorp.com/wood-preservation">nisuscorp.com/wood-preservation</a>
Viance, LLC	CCA, DCOI	<a href="http://treatedwood.com">treatedwood.com</a>