The CCA Pole

The pole of the future with a 75-year past.
When the Bell Telephone System installed 18,000 CCA-treated southern pine poles in 1940 and 1941, it was the first large-scale use of CCA wood poles by the utility industry. Some of those poles have been removed since then due to line obsolescence or accidents, but not a single one is known to have been removed due to biological degradation.

CCA was first formulated in 1933 and has been used in countless residential, commercial, agricultural, and institutional projects. Supporting transmission and distribution lines around the globe, CCA poles have been exposed a huge range of conditions with the same results: dependable performance and long service life.

The Ideal Material and an Unsurpassed Preservative

Wood is the ideal material for utility poles. They are produced from a renewable resource which is resilient and extremely resistant to oxidation, corrosion, fatigue, crumbling and spalling.

From a commercial standpoint, wood has only one shortcoming: this natural resource is biodegradable. But with CCA preservative, wood is easily and cost-effectively protected against the biological degraders that cause it to weaken and collapse in nature, namely fungi and termites.

Treating wood with Wolman® CCA preservative extends service life 10-20 times because after treatment the wood is no longer attractive as a food source to fungi and termites. This claim is backed by a 50-year limited warranty on Wolmanized® CCA poles.
Chromated Copper Arsename, or CCA, is a chemical preservative which gives utility poles durability by rendering the wood fiber useless as a food source for fungi and termites. Wolmanized® CCA poles are protected by an oxide formulation of CCA Type C. It is a mixture of stable metallic oxides which, on contact with wood fibers, forms insoluble precipitates in the wood cells. Once these precipitates become fixed in the wood, they do not migrate or evaporate. The treated poles are highly leach-resistant. Since Wolman preservative is an oxide formulation of CCA, it provides optimal reactivity and fixation without leaving unwanted, corrosive by-products on the surface of the pole.

Stakes treated with Wolman preservative and embedded in a test plot, such as the one pictured here, by the U.S. Forest Service in 1934 have shown no sign of failure from decay or insects. Untreated posts failed after just three years.

Poles are moved into a treating cylinder where CCA is forced into wood under pressure. When treating is completed and CCA poles are pulled from the cylinder, approximately 80 percent of chemicals are “fixed” in the wood. Further fixation occurs soon thereafter, leaving the poles highly leach resistant.
Features Add Up to Dependability, Durability

Wolmanized CCA poles have a number of features which make them the utility poles of choice. They are clean to the touch, odor free, highly leach resistant, and friendly to the environment. In addition, they offer low conductivity and low corrosivity. And with CCA pressure-treatment, the physical properties which make wood a superior material for utility poles are not significantly altered.

Long Life

Wolmanized CCA-treated poles are backed by a 50-year warranty against damage from termites and fungal decay. If, within 50 years of purchase, a Wolmanized CCA pole suffers damage from either cause that renders the pole unfit for its use, the owner will be reimbursed for the full original purchase price. For details, see www.WolmanizedWoodHD.com/poles.

Ongoing research and development has led to improvements in both the production and performance of CCA poles.

Low Conductivity

Since the Wolman preservative used in CCA poles is an oxide, rather than a salt formulation, there are no by-products to increase conductivity. The low conductivity of dry Wolmanized poles provides protection against the effects of current leakage and increases the safety and security of line workers.

Low Corrosivity

Corrosion of hardware — galvanized through bolts, metal pole steps, and lag screws — has not been a problem with CCA poles since the oxide formulation was introduced. Fasteners meeting ASTM A 153 are recommended.

The Wolman CCA oxide formulation is just slightly more corrosive than untreated wood and water, and has not caused troublesome corrosion of hardware.
Strength

Full-scale testing has shown that CCA treatment does not significantly affect bending strength and, in some species of wood, it even increases it slightly. The increase in modulus of rupture is not sufficient to impact the calculation of design stress, but it does eliminate concerns about the strength of CCA treated poles and it provides an extra cushion in the engineering and construction of a utility pole line.

Fixed Preservative

Because of CCA fixation in the wood, there is virtually no migration. As a result, remedial groundline treatment is not necessary for aging poles and there is no need to rotate poles in storage.

Cleanliness

In addition to the long-lasting performance they provide, CCA poles make good neighbors. Since the preservative is carried into the wood in a water solution and is highly leach resistant, CCA poles are clean to the touch and nonstaining to utility work crews and to children who might come in contact with them.

Safety

A respected environmental consulting firm, Gradient Corporation, conducted a human health risk assessment on children who play near CCA poles and workers with exposure to these poles. The assessment found less intake of inorganic arsenic from poles than from normal intake of food and drinking tap water. The report is available in printed and electronic formats (see www.WolmanizedWoodHD.com/poles and click on Human Health Risk Assessment).

An eastern utility has subjected CCA poles to strength tests. All samples passed ANSI design criteria, some deflecting more than seven feet before breaking.

At left, before the treating process begins, Wolman CCA solution is analyzed to confirm its proper composition. Above, retention levels are verified by core borings extracted from every charge.

Reading a Utility Pole Brand

Species code:
SP Southern Pine
WC Western Red Cedar
JP Jack Pine
LP Lodgepole Pine
NP Red (Norway) Pine
WP Ponderosa Pine

Producer’s code
Location code
Month (optional) & year treated
Preservative code:
SK CCA
C Creosote
P Penta

Class Numeral (indicates circumference)

NTC
5-09

F

SP SK

5-35

Length, in feet
**Wolmanized® ET® Poles**

All the advantages of CCA poles, plus they’re easier to climb

Even though the increased use of bucket trucks in recent years has reduced the need to climb poles, gaff penetration continues to be a concern for some users. The ET pole combines the longevity and cleanliness of CCA poles with the climbability of oil-impregnated poles. Developed by Lonza Wood Protection, North America’s technological leader in CCA preservative, the ET pole is treated with a refined hydrocarbon oil emulsion in the outer layer of the pole following treatment with CCA. The viscous oil additive serves as a lubricant, making the pole easier to climb and to work on without affecting the preservative properties of the CCA treatment.

![Image of ET poles](Image)

**The original ET additive is colorless; a brown colorant is now available.**

---

**Climbing trials show lasting value**

Numbers below represent average combined scores for climbability, as given by linemen following climbing trials. Scores are based on a 1-10 scale, with 10 being the easiest to climb.

<table>
<thead>
<tr>
<th></th>
<th>9-Year Trial 1997</th>
<th>14-Year Trial A 2002</th>
<th>14-Year Trial B 2002</th>
<th>20-Year Trial 2008</th>
<th>23-Year Trial 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCA</td>
<td>4.8</td>
<td>5.5</td>
<td>4.6</td>
<td>5.6</td>
<td>5.1</td>
</tr>
<tr>
<td>Penta</td>
<td>7.2</td>
<td>7.0</td>
<td>—</td>
<td>7.6</td>
<td>5.7</td>
</tr>
<tr>
<td>CCA ET</td>
<td>7.6</td>
<td>7.3</td>
<td>6.8</td>
<td>7.6</td>
<td>6.8</td>
</tr>
</tbody>
</table>

All poles were installed in 1988. The 9-year evaluation was done by climbers from Carolina Power & Light; the 14-year by climbers from Georgia Power Company; 20-year by climbers from Snapping Shoals EMC, Mid-Carolina Cooperative, and EnergyUnited; and the 23-year by climbers from Southwestern Electric Power Company, Public Service Company of Oklahoma, and AEP-Texas.

---

**Another alternative: PA**

In addition to the ET treatment, CCA poles may be treated with Polymer Additive to facilitate climbing.

Co-developed with the research institute of Hydro-Québec, the patented CCA-PA system begins with pressure-injection of water-soluble solution into the poles. The wood is then heated, polymerizing the additive so that it forms a three-dimensional insoluble network.
ET poles offer these benefits:

- No need to rotate poles during storage because of the emulsion’s high viscosity.
- Can be touched and handled without special safety precautions.
- Easier to saw, drill and nail into than regular CCA poles because the emulsion additive acts as a lubricating oil.
- Retention of oil can be readily verified by inspection agencies — a difficult task with other additives.
- RUS (formerly REA) approved.
- Resistance to termites and fungi for decades.
- Excellent climbing characteristics confirmed by numerous field-climbing trials on both new and aged poles.
- No need for future groundline remedial treatment, since fixation of CCA virtually eliminates preservative migration.
- Low corrosivity.

FireSheath™ Coating

A field-applied fire retardant coating called FireSheath™ fire retardant coating helps protect poles against the common types of fire that can damage or even topple a pole. FireSheath™ coating is applied by brush, roller, or power sprayer (preferably airless sprayer) typically from the pole’s groundline to a height of about six feet. The intumescent coating foams up in the event of a fire, creating char which insulates underlying wood from the fire’s heat. In the ASTM E 84 tunnel test, wood coated with the formulation qualified as a Class A fire retardant material, with a Flame Spread rating of 5 and a Smoke Developed rating of 65. The coating will remain effective for several years, depending on application, weather, and occurrence and duration of fires.

Production of CCA Poles — from forest to market

Following is a typical sequence in the production of a Wolman CCA utility pole.

1. Most Wolman CCA poles produced in North America are cut from southern yellow pine, although some are cut from red pine, lodgepole pine, ponderosa pine, western red cedar, and jack pine. Felled trees are visually inspected while still in the forest to determine their suitability as poles.

2. Pole-quality trees are processed to remove bark and the cambium layer, and to trim all branch stubs and overgrown knots. Waste removed during these steps is recycled as bedding or landscape chips, or is used as a fuel.

3. Poles are then separated into classes based on their circumference 6 feet from the butt. They are inspected for straightness, twist of grain, excessive knots, defects, decay, or other damage, according to ANSI standards. Next they are dried to a moisture level of 28% or less in the zone 2” to 3” from the pole surface.

4. The poles are framed, or cut to the specifications necessary for crossarms, before treatment. This ensures that the cut surfaces will receive adequate preservative treatment. Each pole is burn-branded so there is a permanent record of vital information about it for later reference.

5. For treatment, the poles are loaded onto a specially designed tram. Trams are pushed into a large, horizontal treating cylinder, the cylinder door is sealed, and a vacuum is applied to remove most of the air from the cylinder and from the wood cells.

6. Wolman CCA solution is pumped into the cylinder, and the pressure is raised to about 150 psi, forcing the preservative into the wood. The pole is treated to a retention level of 0.60 pounds per cubic foot in the assay zone appropriate for the species. For ET poles, the oil emulsion is impregnated into the outer layer of the pole following CCA treatment.

7. After treatment, the poles are allowed to dry, and the chemicals become “fixed” in the wood. The poles are then shipped to their destinations, where they can be stored in the same position for years without any loss of protection or need for rotation.

8. CCA poles are in common use around the world for both the distribution and transmission of electricity.
Backed by international expertise . . .

Wolman® CCA preservative is a product of Lonza Wood Protection, which also oversees the quality of its licensed brands: Wolmanized® wood and ET® CCA/oil emulsion. In alliance with innovative organizations, Lonza is the world leader in the production and technology of waterborne wood preservatives. The Lonza expertise results from decades of experience and ongoing research at laboratories in the United States, England, and New Zealand.

. . . And proven environmental benefits

Wolmanized wood is a proven and environmentally sound choice. It comes from a rapidly replenished, renewable resource grown on managed timberlands; it requires less energy to produce than alternative products; it embodies carbon, reducing greenhouse gases; its production releases no air pollutants nor wastewater; the CCA is manufactured, in part, from recycled materials; the treatment extends the service life of wood, thereby reducing demands on forests; and because of its lighter weight, preserved wood can often be installed with smaller equipment that has less environmental impact.

www.WolmanizedWoodHD.com/poles
For your next order, get warranted Wolmanized® poles and crossarms.
Wood poles and crossarms can withstand termites and fungal decay for decades. **We guarantee it.**

When you select treated wood poles and crossarms, you do not have to worry about corrosion, gentle handling, spalling, or raptor safety. And, now, you don’t have to be concerned about termites or rot. Not for 50 years.

Wolmanized® CCA-treated poles and crossarms are backed by a 50-year limited warranty against damage from termites and fungal decay. If, within 50 years of purchase, a Wolmanized® CCA pole or crossarm suffers damage from either cause that renders the wood unfit for its use, the owner will be reimbursed for the full original purchase price.

There is no prorated devaluation. No registration. And no cost. Read the warranty for details. The warrantor is Lonza Wood Protection, the world’s largest producer of CCA preservative technology.

Wood poles are the traditional and advantageous choice for utility structures. CCA-treated wood poles feature fixed protection with no need for pole rotation during storage or for groundline treatment in service. And Wolmanized® CCA-treated wood poles are backed by a 50-year limited warranty.

For your utility needs, get Wolmanized® wood poles and crossarms and get a 50-year limited warranty.

---

**WOLMANIZED® CCA-TREATED WOOD POLE & CROSSARM**

**50-YEAR LIMITED WARRANTY**

This warranty extends ONLY to the owner of the Wolmanized® CCA-treated pole or crossarm, and is good for fifty (50) years from the date of first purchase.

Subject to the terms, conditions and limitations contained in this Warranty, Arch Wood Protection, Inc. (“Warrantor”) warrants to the owner of a Wolmanized® CCA-treated wood pole or crossarm that for a period of 50 years following the date of original purchase such pole or crossarm will not suffer damage caused by termites or fungal decay that makes the pole or crossarm structurally unfit for the application for which it was intended (as defined by the National Electric Safety Code for the year of manufacture). In the event of a valid warranty claim, the owner of the pole or crossarm will be entitled, as the sole and exclusive remedy, to reimbursement of the original price paid for the non-conforming Wolmanized wood pole or crossarm. To obtain approval for reimbursement under the warranty, the owner must send, within 30 days of discovery of the damage covered hereunder, the original purchase invoice, or other proof showing that the Wolmanized pole or crossarm was purchased from Warrantor’s licensee or its authorized supplier, to the Warrantor at:

Wolmanized® CCA-Treated Wood Poles
Warranty Claim Administrator
Arch Wood Protection, Inc.
5660 New Northside Drive NW, Suite 1100
Atlanta, GA 30328

Before approving any warranty claim, Warrantor may require owner to send photographs and pieces of damaged wood. In addition, at the Warrantor’s request, the Warrantor and its representatives and agents must be permitted to inspect and test the damaged structure to determine the validity of the warranty claim.

Notwithstanding any provision hereof to the contrary, Warrantor shall NOT be liable hereunder for any of the following: (a) damage to any Wolmanized pole or crossarm resulting from any cause other than termites or fungal decay; (b) damage to any Wolmanized pole or crossarm that has been used in a non-utility structure or a structure outside of North America or used for an application or in a way that is not consistent with its intended end use (as defined by the National Electric Safety Code for the year of manufacture); (c) damage to any Wolmanized pole or crossarm that was not pressure-treated in accordance with the American Wood Protection Association (AWPA) Standard U1; or (d) damage to any Wolmanized pole or crossarm that does not bear (i) a brand or tag that incorporates the name of the Wolmanized wood pole or crossarm producer including month/year of production with quality assurance program marks (if applicable) and (ii) the mark(s) of a quality assurance program or an independent inspection agency showing acceptance to AWPA Standard U1.

The warranty does not cover, and Warrantor shall not be responsible for, installation, repair, construction, labor or similar costs, or for any costs or damage which may be associated with the natural characteristic of some wood to split, crack, warp, twist, weather or erode.

**BY PURCHASING OR ACCEPTING OWNERSHIP OF A WOLMANIZED WOOD POLE OR CROSSARM, OWNER ACCEPTS AND ACKNOWLEDGES, AND WARRANTOR HEREBY STATES, THAT THIS WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY AND REPLACES ALL OTHER REPRESENTATIONS, WARRANTIES, GUARANTEES, TERMS, COVENANTS, AGREEMENTS, PROMISES, COMMITMENTS, DUTIES OF CARE OR CONDITIONS, EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH WARRANTOR HEREBY SPECIFICALLY DISCLAIMS, AND THERE ARE NO OTHER REPRESENTATIONS WHATSOEVER WITH RESPECT TO WOLMANIZED WOOD POLES OR CROSSARMS EXCEPT THE LIMITED WARRANTY GIVEN HEREUNDER. ONLY THE WARRANTOR IS LIABLE UNDER THIS LIMITED WARRANTY AND ITS DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS SHALL HAVE NO LIABILITY OF ANY KIND WITH RESPECT TO THE PURCHASE OR USE OF WOLMANIZED WOOD POLES OR CROSSARMS.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL WARRANTOR BE RESPONSIBLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION, DAMAGE TO, DEATH OR INJURY ARISING OUT OF OR RELATING TO THE PURCHASE OR USE OF WOLMANIZED WOOD POLES OR CROSSARMS.

This warranty shall be governed by the laws of the State of Georgia, without regard to its conflict of laws rules.