



Conrad Forest Products

Since 1958 our company philosophy has remained unchanged:

We provide purchasers with quality products, a wide range of choices, and consistent, professional service.

Headquartered on the south Oregon coast, Conrad Forest Products served as a pioneer in pressure treatment. Our preservation experience goes back to 1958 when we began providing durability to common species of wood. Since then, we have undergone significant changes in our capabilities, technology, products, and services. Furthermore, we strive to produce environmentally beneficial building materials in an environmentally sound manner.

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The Chemonite® Tie

Chemonite® is the registered trade name for Ammoniacal Copper Zinc Arsenate (ACZA), which is the singular waterborne wood preservative approved for use by AWPA in both hardwood and softwood crossties. Chemonite® treated crossties perform similarly to more well-known and established wood preservatives but offer advantageous economical and handling features making them an exceptional choice for railroads.

Chemonite® ACZA-treated crossties have undergone rigorous field and laboratory testing to ensure they will provide many years of useful service life.

- They are resistant to termites and fungal decay in the most challenging environments.
- Tie strength is not perceptibly affected by treatment. (reference)
- They show no more increase in corrosion to metals than untreated wood. In typical rail tie installations, the use of special hardware is not required, however, the end use should be evaluated to determine if hot-dipped galvanized or stainless steel hardware is warranted.
- ACZA crossties have excellent spike-holding characteristics. (reference)
- Metallic oxides in ACZA are no more conductive than untreated wood.

Borate Additive Benefits

The EPA-registered wood preservative, DOT (borates), can be added directly to ACZA treating solutions to create a more robust preservative treatment for hardwood and softwood railroad ties. Like ACZA, borates have a long history of effective decay prevention. It has been used for decades in weather-protected applications and as a supplement to other weather-exposed wood preservative treatments. Borates use the free water in wood cells to diffuse throughout the cross-sectional area resulting in protection of fiber that might otherwise be vulnerable to decay when exposed to checking and wear. Borates also inhibit corrosion, enabling spikes to maintain their integrity for longer periods to time.

Douglas Fir

The strength and resilience of Douglas fir combined with the long-term protection of ACZA yields a construction material that has been providing reliable service for decades. Douglas fir is a leading timber species grown on managed forest land in the Western states and provides a message of sustainability when treated with ACZA. This treatment provides enough useful service life for another tree to grow to maturity to replace it.



Decades of Service

Douglas fir crossties treated with ACZA have been offering superior performance in hundreds of miles of track in short line railroads in the Western United States and beyond. Test tracks have also been installed in exceptionally harsh environments to understand the limits of performance. In a study designed by Arxada and Mississippi State University and sponsored by the Railway Tie Association, test tracks treated with a variety of wood species and ACZA were installed in three locations with a high propensity for wood decay. Tracks located in Hazard Zone 5+ (SW Florida), Hazard Zone 5 (SE Georgia) and Hazard Zone 4 (East North Carolina) have been monitored several times over ten years for the presence of decay and structural failure.

At the most recent inspection performed by representatives from MSU no major biological degradation was noted. [we need to find the report from MSU on this for reference]



SW Florida (hazard zone 5+)



Eastern North Carolina (hazard zone 4)



Southeast Georgia (hazard zone 5)

After the last review, Mike Sanders from Mississippi State observed:

“All ties seemed to be performing well at the time of inspection. No major biological deterioration was noted in any of the test ties at the time of the inspections.”



AWPA Retention Requirements

Pilings and Columns

Application	Use Category	ACZA (PCF)
Crossties	4C	0.40

Allowable Species

Oak	Hardwoods	Eastern Pine	Western Pine	Western Species
Red	Hickory	Southern	Jack	Coastal Douglas Fir
White	Mixed Hardwoods	Ponderosa	Red	Hemlock
			Lodgepole	Larch



Field Treating

Wherever practical wood should be manufactured to its final form prior to treatment. Treated wood products should not be dragged along the ground. All field cuts and drill holes should be field treated. Field treating (as well as applying sealers) should be done well away from the water if at all possible. If over-water treatment is necessary, steps should be taken (such as using tarps) to collect any surplus treatment for removal and disposal. Any damage to treated wood should be treated in accordance with the American Wood Protection Association (AWPA) Standard M4.

Per AWPA Standard M4 acceptable preservatives for field treatment include copper naphthenate (minimum 2% copper metal), borates (minimum 1.5% B_2O_3 ; not permitted with water or ground contact), and oilborne oxine copper (minimum 0.675% oxine copper or 0.12% copper metal).

Removal and Disposal

State and local requirements vary, but, in general, lined landfills accept retired Chemonite crossties and scraps in accordance with the same requirements that apply to other building materials. Where questions exist, confirmation from the appropriate local authority is recommended.

TREATED WOOD SHOULD NOT BE BURNED in open fires or in stoves, fireplaces, or residential boilers because toxic substances may be produced as part of the smoke and ashes. Treated wood from commercial or industrial use (e.g., construction sites) may be disposed of by complying with local landfill rules or burned in commercial or industrial incinerators or boilers when done in accordance with state and federal regulations.

Dispose of in accordance with local, state, and federal regulations. State run hazardous waste programs may be more stringent. Some state sites are listed below.

California : <https://dtsc.ca.gov/toxics-in-products/treated-wood-waste/>

Oregon : <https://www.oregon.gov/deq/hazards-and-cleanup/hw/pages/hw-rules.aspx>

Washington : <https://ecology.wa.gov/regulations-permits/guidance-technical-assistance/dangerous-waste-guidance>



Testing

Spike Withdrawal

Force required to withdraw spikes from Douglas-fir railway ties^a
Withdrawal Force (lbs)

Treatment	Before Exposure	Above Ground After 1 Year of Exposure	On Soil After 1 Year of Exposure	Above Ground After 2 Years of Exposure	On Soil After 2 Years of Exposure
ACZA	3753 (788)	5905 (1269)	5704 (1401)	6340 (1634) ^b	6941 (1868) <u>b</u>
Creosote	3269 (641)	4359 (1562)	4686 (2039)	5189 (1754)	5408 (1574)
None	3576 (1023)	4964 (1621)	5260 (1619)	5146 (1367)	5755 (1617)

^a Before exposure withdrawal values based upon 30 replicates. One- and two-year exposure values represent means of 15 replicates per treatment. (Values in parentheses show one standard deviation.)

^b Values differ significantly from creosote ties in the same exposure at $\alpha=0.05$.



Testing

Corrosion

The spikes removed from each crosstie for the withdrawal testing were examined for evidence of corrosion. The spikes were measured at the approximate point where the spike emerged from the wood to determine if any cross-sectional loss occurred. The area on the spike where it emerges from the wood is an area where moisture and oxygen levels are optimal for corrosion. In addition, the spikes were cleaned and weighed to determine if weight loss had occurred.

After 2 years of exposure spike thickness loss was similar for ACZA and untreated ties; loss for the creosote ties was smaller. Overall, none of the spikes had a significant amount of thickness loss.

After 2 years of exposure, weight losses for spikes in all ties were less than 0.5% of their original weight. Weight loss of spikes in ACZA and untreated ties was similar with slightly lower losses for creosote ties. This is the same trend that was seen in the thickness losses.

Conductivity

While conductivity effects on poles were included in the 1983 AWPA package for preservative approval, conductivity is also a concern in tie installations due to signaling equipment used by railroads. Several types of tests have been conducted using actual poles, boards and even pellets of the dried preservative. In all tests ACZA treated wood products were found to be equivalent to untreated wood and research showed moisture content was the determining factor in conductivity rather than the preservative types. ACA and ACZA have been used in utility poles for over 50 years with no conductivity issues.

A short line in Western Oregon, which has been using ACZA Douglas fir ties for over three years, installed ACZA ties in switch/signaling applications and found no conductivity issues. "We have 6 crossings with approximately 2,400 ties per crossing. All 6 crossings have AC-DC circuits, with no problems to the systems." - Albany & Eastern R/R.



Testing

Fire Resistance

The effects of fire on wood products has always been a concern in its usage and any effect a preservative system may have on improving fire resistance increases the probability of continued or increase wood product usage. Historical testing done by U.S. Testing Labs and UL gave good indications that ACZA treated wood has fire resistant properties. ACZA treated wood is more difficult to ignite than untreated wood and at a retention of 0.35 pcf showed a flame spread rating of 41.7 and smoke development of 115.8 which meets the requirements for a Class B/II fire retardant. Current AWPA minimum retention requirement is 0.40 pcf. for ACZA ties and 0.60 pcf for poles. At retention of 1.86 pcf ACZA treated Douglas fir achieves a Class A/I fire retardant rating with a flame spread of 24.8 and a smoke development of 78.2. Results of these tests are summarized in the table below.

Fire Restance Testing

Species	Size	Solution Strength	Retention pcf	Flame Spread	Smoke Development
Doug fir	2x6	2.46%	0.35	41.7	115.8
Doug fir	2x6*	5.25%	0.95	40.0	80.0
Doug fir	2x6	6.96%	1.37	30.9	36.9
Doug fir	2x6	10.06%	1.86	24.8	78.2
Doug fir	2x6*	12.40%	3.20	25.0	20.0

a * Samples were run by U.S. Testing labs, and by Underwriters



Testing

Strength

Strength Testing - Compression \perp Perpendicular to Grain

Red Oak	Mean	Group: ACZA vs Controls	
A	2,227	UNT UNSTEAM	Only ACZA unsteamed lower than controls
A	2,118	UNT STEAMED	No deleterious effect of steaming on compression perpendicular to grain
A	2,109	ACZA STEAMED	
B	1,884	ACZA UNSTEAM	
Red Oak	Mean	Group: CREOSOTE vs Controls	
A	2,342	CREO UNSTEAM	Controls same or less indicates no deleterious effects
BA	2,227	UNT UNSTEAM	
BA	2,217	CREO STEAMED	
B	2,218	UNT STEAMED	
Sweetgum	Mean	Group: ACZA vs Controls	
A	1,416	UNT UNSTEAM	Compared to unsteamed controls, no effect of steaming
BA	1,392	UNT UNSTEAM	
BA	1,311	ACZA UNSTEAM	
B	1,275	ACZA STEAMED	
Sweetgum	Mean	Group: CREOSOTE vs Controls	
A	1,598	CREOSOTE STEAMED	Controls same or less indicates no deleterious effects
BA	1,519	CREOSOTE UNSTEAM	
B	1,416	UNT UNSTEAM	
B	1,392	UNT UNSTEAM	

Static Bending

“Compared to untreated, steamed stock, no steaming treatment caused a significant reduction in any bending property evaluated. While there were differences among treatments, no clear trend emerged. When compared to untreated, unsteamed red oak, a drop of 10% or less was noted across all properties evaluated. This is consistent with published data which indicates a 10%, or less, drop in properties after treatment. From a strength and stiffness standpoint, steaming and subsequent treatment of red oak causes no problems and should be fine for treatments requiring steaming before treatment. “Dr. H. M. Barnes, MSU.

Conclusions and Summary Brief

Environmental Life Cycle Assessment of Ammoniacal Copper Zinc Arsenate-Treated Railroad Ties with Comparisons to Concrete and Plastic/Composite Railroad Ties

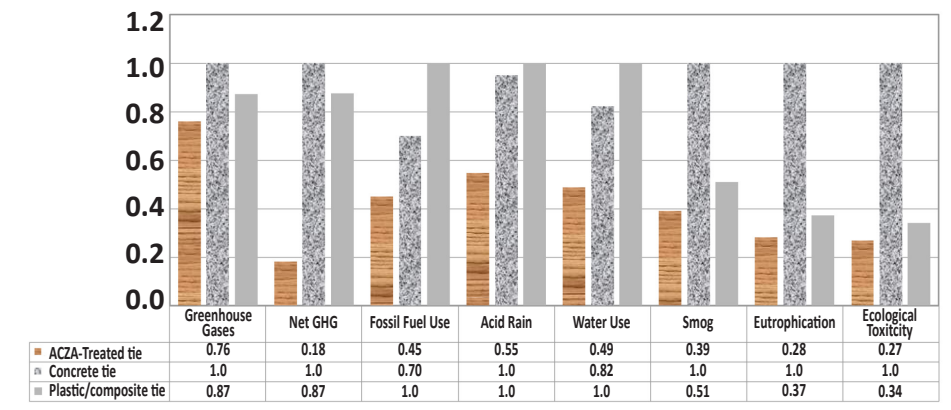
Arxada commissioned AquAeTer, Inc., an independent consulting firm, to prepare a quantitative evaluation of the environmental impacts associated with the national production, use, and disposition of ammoniacal copper zinc arsenate (ACZA)-treated, concrete, and plastic/composite (P/C) railroad ties, using life cycle assessment (LCA) methodologies and following ISO 14044 standards. The comparative results confirm:

- **Less Energy & Resource Use:** ACZA-treated wood railroad ties require less total energy, less fossil fuel use, and less water than concrete and P/C railroad ties.
- **Lower Environmental Impacts:** ACZA-treated wood railroad ties have lower environmental impacts in comparison to concrete and P/C railroad ties for all six impact indicator categories assessed: anthropogenic greenhouse gas, total greenhouse gas, acid rain, smog, eutrophication, and ecotoxicity-causing emissions.
- **Greenhouse Gas Levels:** Compared to annual GHG emissions from national railroad fuel use, the net GHG “footprint” resulting from the railroads’ choice of tie materials is notable at 1.1% for ACZA-treated ties, 6.3% for concrete ties, and 5.5% for P/C ties.
- **Offsets Fossil Fuel Use:** Reuse of ACZA-treated railroad ties for energy recovery in permitted facilities with appropriate emission controls will further reduce greenhouse gas levels in the atmosphere, while offsetting the use of fossil fuel energy.

Impact indicator values were normalized to better support comparisons between products and to understand the quantitative significance of indicators. Product normalization sets the cradle-to-grave life cycle value of maximum impact to 1.0, and all other values are a fraction of 1.0. The normalized results are provided in Figure 1.



Figure 1. Normalized impact indicator comparison (maximum impact = 1.0)



Scope

The scope of this study includes:

- A life cycle inventory of ACZA-treated, concrete, and P/C railroad ties modified from a life cycle inventory of creosote-treated railroad ties done for the Treated Wood Council.
- Calculation and comparison of life cycle impact assessment indicators: anthropogenic greenhouse gas, total greenhouse gas, acid rain, smog, ecotoxicity, and waterborne eutrophication impacts potentially resulting from life cycle air emissions.
- Calculation of energy, fossil fuel, and water use.



Impact Category	Units	ACZA-treated tie	Concrete tie	Plastic/composite tie
Energy Use				
Energy input (technosphere)	MMBTU	34	53	90
Energy Input	MMBTU	74	112	143
Biomass energy	MMBTU	0.97	1.0	1.2
Environmental indicators				
Anthropogenic greenhouse gas	lb-CO ₂ -eq	23,486	30,928	26,978
Total greenhouse gas	lb-CO ₂ -eq	5,662	31,175	27,268
Acid rain air emissions	lb-H+ mole-eq	5,615	9,783	10,277
Smog potential	g NOx/m	22	58	29
Ecotoxicity air emissions	lb-2,4-D-eq	51	188	64
Eutrophication air emissions	lb-N-eq	1.0	3.7	1.4
Resource use				
Fossil fuel use	MMBTU	100	154	220
Water use	gal	3,313	5,571	6,771

Table 1. Environmental performance of railroad ties (per mile of track/year of railroad service)

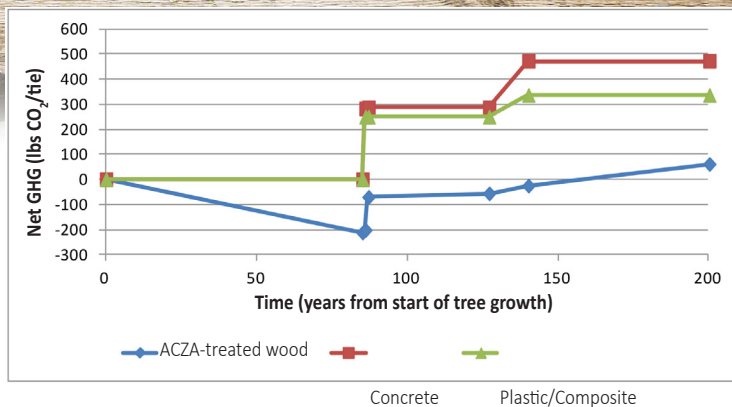


Figure 3. Carbon balance for tie products (per tie)

Environmental Performance

The assessment phase of the LCA uses the inventory results to calculate total energy use, impact indicators of interest, and resource use. For environmental indicators, USEPA's Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI) is used to assess anthropogenic and total greenhouse gas, acid rain, smog potential, ecotoxicity, and eutrophication impacts potentially resulting from air emissions. The categorized energy use, resource use, and impact indicators provide general, but quantifiable, indications of environmental performance. The results of this impact assessment are used for comparison of railroad tie products as shown in Table 1.

Wood products begin their life cycles removing carbon from the atmosphere (as carbon dioxide) and atmospheric carbon removal continues as trees grow during their approximate 80-year growth cycle, providing an initial life cycle carbon credit. Approximately half the mass of dry wood fiber is carbon. Transportation and treating operations are the primary sources of carbon emissions in the manufacture of treated wood products.

The concrete and plastic/composite ties begin their life cycles either as raw materials or with the recycling of

products. Both processes result in carbon emissions. Burdens associated with recycling, including transportation, sorting, cleaning, and melting, must be included in the manufacturing stage.

Minimal impacts are required for both treated wood, concrete, and P/C ties in the service life stage. Following the service life stage, ACZA-treated wood ties are recycled for secondary uses or disposed in landfills. Non-wood material ties are recycled or disposed in landfills. The carbon balance of railroad ties, through the life cycle stages, is shown in Figure 3. ACZA-treated wood products currently are not used as a combustion fuel for energy recovery; however, future procedures might make such recovery feasible.

Quality Criteria

This study was done as an extension of work performed by the Treated Wood Council and is not intended as a stand-alone LCA. The study includes most elements required for an LCA meeting the International Organization for Standardization (ISO) guidelines as defined in standards ISO/DIS 14040 "Environmental Management – Life Cycle Assessment – Principles and Framework" and ISO/DIS 14044 "Environmental Management – Life Cycle Assessment – Requirements and Guidelines". However, there was no external peer review of the ACZA components of this LCA.



Additional Information

This study is further detailed in a Life Cycle Assessment Report completed in April 2013 and is available upon request from Arxada at 1200 Bluegrass Lakes Parkway, Alpharetta, GA 30004 (WolmanizedWood.com).

This study is based on data collection and analysis done as part of an LCA on creosote-treated railroad ties. A manuscript of the creosote-treated railroad ties findings was published in the peer-reviewed Journal of Transportation Technologies (Vol. 3 No. 2, April 2013, pp 149-161) and is available at <http://www.scirp.org/journal/jtts>.

Model Specification for ACZA-Treated Wood

The following paragraphs are for insertion into a section of generic specifications or generic/proprietary specifications covering rough carpentry to include preservative treated wood. Notes shown in italics should not be included in the final specification.

PART 1 GENERAL

1.01 REFERENCES

- A. American Wood Protection Association (AWPA) Book of Standards:
 - 1. Standard U1, Use Category System: User Specification for Treated Wood.
 - 2. Standard P22, Standard for Ammoniacal Copper Zinc Arsenate (ACZA).
 - 3. Standard M4, Standard for the Handling, Storage, Field Fabrication, and Field Treatment of Preservative-Treated Wood Products.
 - 4. Standard T1, UCS Processing and Treatment Standard.

- B. National Institute of Standards and Technology (NIST):
 - 1. PS 1, U.S. Product Standard for Construction and Industrial Plywood.
 - 2. PS 20, American Softwood Lumber Standard.

- C. Western Wood Preservers Institute
 - 1. Best Management Practices for the Use of Treated Wood in Aquatic Environments.

1.02 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Treatment Facility: Provide treated materials that have been produced under the appropriate ASTM or ANSI standard or an ALSC recognized quality assurance program.

1.03 DELIVERY, STORAGE, AND HANDLING

If drying after treatment is selected in Part 2, retain the two paragraphs below.

- A. Packing and Shipping:
 - 1. Provide waterproof covers for preservative treated wood during shipment.

- B. Storage and Protection:
 - 1. Store preservative treated wood off the ground and protected from the weather.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Preservative: Chemonite® ACZA (Ammoniacal Copper Zinc Arsenate); Arch Wood Protection, Inc.

2.02 MATERIALS

Lumber for preservative treatment must conform to the following specifications. Select grade and species below. Other grades and species may be acceptable, contact Arch to verify.

- A. Lumber: In accordance with NIST PS 20 and as follows:
 - 1. Grade:
 - 2. Species:
 - 3. Surfacing:
 - 4. Moisture Content: 19%, maximum.

Plywood for preservative treatment must conform to the following specifications. Select panel grade, exposure durability, species group, and structural rating from below.

- A. Plywood: In accordance with NIST PS 1 and as follows:
 - 1. Panel Grade: A-C.
 - 1. Panel Grade: B-C.
 - 1. Panel Grade: C-C.
 - 1. Panel Grade: C-D.
 - 2. Exposure Durability: Exterior.
 - 2. Exposure Durability: Exposure 1.
 - 3. Species Group: 1.
 - 3. Species Group: 2.
 - 4. APA Structural Rating: Structural I.
 - 4. APA Structural Rating: Structural II.

- B. Preservative: ACZA in accordance with AWPA P5.

2.03 PRESERVATIVE TREATMENT

- A. Pressure Treatment: In accordance with the requirements of AWPA Standard U1 and in accordance with the following Commodity Specification:
 - 1. A: Sawn Products.
 - 2. B: Posts.
 - 3. D: Poles.
 - 3. E: Round Timber Piling.
 - 4. F: Wood Composites (including Plywood).
 - 5. G: Marine (Salt Water) Applications.

- B. Preservative Retention: In accordance with AWPA Standard U1 and appropriate Commodity Specification for the following use category:
 - 1. UC2 Interior construction, Above Ground, damp.
 - 2. UC3A Exterior construction, Above Ground, coated & rapid water run-off.
 - 3. UC3B Exterior construction, Above Ground, uncoated or poor water run-off.
 - 4. UC4A Ground Contact or Fresh Water, non-critical components.
 - 5. UC4B Ground Contact or Fresh Water, critical components or difficult replacement.
 - 6. UC4C Ground Contact or Fresh Water, critical structural components.
 - 7. UC5A Salt or brackish water and adjacent mud zone, northern waters.
 - 8. UC5B Salt or brackish water and adjacent mud zone, NJ to GA, south of San Francisco.
 - 9. UC5C Salt or brackish water and adjacent mud zone, south of GA, Gulf Coast, Hawaii, and Puerto Rico.

C. Moisture Content: Drying after treatment is not required.

Select above or below.

C. Moisture Content: Dry after treatment as follows:

1. Lumber: 19%, maximum.
2. Plywood: 18%, maximum.
3. Plywood: 15%, maximum (*for Permanent Wood Foundation*).

Retain below if fixed preservative is required for aquatic environments.

D. Pressure Treatment of Materials for Aquatic Environments: In accordance with the Best Management Practices published by the Western Wood Preservers Institute.

2.05 SOURCE QUALITY CONTROL

A. Inspection:

1. Untreated Material:

- a. Lumber: Provide lumber that has been inspected and graded before treatment by an ALSC-recognized grading agency.
- b. Plywood: Provide plywood that has been inspected and graded before treatment by a code-recognized inspection and testing agency.
- c. Poles: Provide poles that have been inspected and graded before treatment in accordance with ANSI standards.
- d. Piling: Provide piling that has been inspected and graded before treatment in accordance with ASTM standards.

2. Treated Material: Provide treated material that bears the quality mark of an ALSC-recognized agency which maintains supervision, testing, and inspection of the quality of the product.

PART 3 EXECUTION

3.01 INSTALLATION

Below is not generally required for sapwood species such as southern pine less than 5 inches thick in the eastern and central U.S. No other special installation specifications are required for preservative treated wood.

A. Surface Treatment of Field Cuts: Treat field cuts on members that provide structural support to a permanent structure in accordance with AWWPA Standard M4.

SAFETY DATA SHEET

Issue Date 27-May-2015

Revision Date 09-Dec-2021

Version 4

1. IDENTIFICATION

Product identifier

Product Name

Chemonite® Treated Wood

Other means of identification

Product Code

20007

Synonyms

ACZA Treated Wood

Recommended use of the chemical and restrictions on use

Recommended Use

Treated Wood.

Details of the supplier of the safety data sheet

Supplier Address

Manufacturer Address

Customers and Licensees of:

Arch Wood Protection, Inc.

3941 Bonsal Road

Conley, GA 30288

Emergency telephone number

Company Phone Number

Emergency Telephone

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 3
Serious eye damage/eye irritation	Category 2B
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3

Label elements

Emergency Overview

Danger

Hazard statements

Causes eye irritation

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause cancer

May cause an allergic skin reaction

May cause respiratory irritation
Causes mild skin irritation



Physical state Solid

Odor Slight Ammonia

Precautionary Statements - Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Avoid breathing dust/fume/gas/mist/vapors/spray
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Use only outdoors or in a well-ventilated area

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Precautionary Statements - Disposal

Dispose of contents/ container to an approved landfill

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

Causes mild skin irritation

Unknown acute toxicity

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Synonyms

ACZA Treated Wood.

Chemical Name	CAS No.	Weight-%	Trade Secret
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Wood and Wood Dust	NOT ASSIGNED	90 - 100	
Ammonium hydroxide (>10 %)	1336-21-6	0.3 - 3	
Cupric Oxide	1317-38-0	0.3 - 3	
Zinc oxide	1314-13-2	0.3 - 3	
Arsenic Pentoxide	1303-28-2	0.3 - 3	

4. FIRST AID MEASURES

Description of first aid measures

General advice	If symptoms persist, call a physician.
Eye contact	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Do not rub affected area.
Skin contact	Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If symptoms persist, call a physician.
Ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11: TOXICOLOGICAL INFORMATION.

Indication of any immediate medical attention and special treatment needed

Note to physicians May cause sensitization in susceptible persons. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Carbon dioxide (CO₂). Water spray or fog.

Unsuitable extinguishing media Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

In the event of fire and/or explosion do not breathe fumes. May cause sensitization in susceptible persons.

Hazardous combustion products Carbon dioxide (CO₂). Nitrogen oxides (NO_x).

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation, especially in confined areas.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions See Section 12: ECOLOGICAL INFORMATION.

Methods and material for containment and cleaning up

Methods for containment Cover with plastic sheet to prevent spreading.

Methods for cleaning up Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Take up mechanically, placing in appropriate containers for disposal. Avoid creating dust. Clean contaminated surface thoroughly. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Take precautionary measures against static discharges.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Do not burn treated wood. Do not use pressure treated chips or sawdust as mulch. Use with local exhaust ventilation. May form combustible dust concentrations in air. Take precautionary measures against static discharges. Avoid contact with skin, eyes or clothing. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Do not breathe dust/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Conditions Avoid generation of dust.

Incompatible materials None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Wood and Wood Dust NOT ASSIGNED	1.0 mg/m ³ Inhalable, 0.5 mg/m ³ Inhalable Western Red Cedar	15 mg/m ³ Total Dust 5.0 mg/m ³ Respirable Fraction	-
Cupric Oxide 1317-38-0	TWA: 1 mg/m ³ Cu dust and mist	-	IDLH: 100 mg/m ³ Cu dust and mist TWA: 0.1 mg/m ³ Cu fume TWA: 1 mg/m ³ Cu dust and mist
Zinc oxide 1314-13-2	STEL: 10 mg/m ³ respirable particulate matter TWA: 2 mg/m ³ respirable particulate matter	TWA: 5 mg/m ³ fume TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 5 mg/m ³ fume (vacated) TWA: 10 mg/m ³ total	IDLH: 500 mg/m ³ Ceiling: 15 mg/m ³ dust TWA: 5 mg/m ³ dust and fume STEL: 10 mg/m ³ fume

		dust (vacated) TWA: 5 mg/m ³ respirable fraction (vacated) STEL: 10 mg/m ³ fume	
Arsenic Pentoxide 1303-28-2	TWA: 0.01 mg/m ³ As	TWA: 10 µg/m ³ As	IDLH: 5 mg/m ³ As Ceiling: 0.002 mg/m ³ As 15 min

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls

Showers. Eyewash stations. Ventilation: Saw, cut or machine wood outdoors or in well ventilated areas. Due to the explosive potential of dust when suspended in air, precautions should be taken when sawing, sanding, or machining wood or wood products to prevent sparks or other ignition sources. If required, use wet methods and/or explosion suppression systems to reduce generation of dust. Local exhaust ventilation is recommended when sawing, sanding, or machining this product. General dilution ventilation is recommended in processing and storage areas.

Individual protection measures, such as personal protective equipment

- Eye/face protection** Use safety glasses with side shields or chemical goggles when sawing or cutting treated or untreated wood.
- Skin and body protection** Wear leather gloves. Wear long sleeve shirt, pants, and steel-toed shoes when handling treated or untreated wood.
- Respiratory protection** None normally required. When sawing or cutting treated or untreated wood, wear a NIOSH approved N95 or better dust mask.

General Hygiene Considerations When using do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Wash hands thoroughly after handling. Keep away from food, drink and animal feeding stuffs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid	Odor	Slight Ammonia
Appearance	No information available	Odor threshold	No information available
Color	dark brown dark green		
Property	Values	Remarks • Method	
pH	No information available		
Melting point / freezing point	No information available		
Boiling point / boiling range	No information available		
Flash point			
Evaporation rate	No information available		
Flammability (solid, gas)	No information available		
Flammability Limit in Air			
Upper flammability limit:	No information available		
Lower flammability limit:	No information available		
Vapor pressure	No information available		
Vapor density	No information available		

Relative density	No information available
Water solubility	No information available
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Dynamic viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	No information available
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Extremes of temperature and direct sunlight.

Incompatible materials

None known based on information supplied.

Hazardous Decomposition Products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure**Product Information**

Inhalation	WOOD and WOOD DUST :. May cause cancer. May cause sensitization by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Eye contact	WOOD and WOOD DUST :. Irritating to eyes.
Skin contact	WOOD and WOOD DUST :. May cause irritation. May cause allergic skin reaction.
Ingestion	WOOD and WOOD DUST :. Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ammonium hydroxide (>10 %) 1336-21-6	= 350 mg/kg (RT)	-	-
Cupric Oxide 1317-38-0	>2,500 mg/kg (RT)	>3,500 mg/kg (RT)	-
Zinc oxide 1314-13-2	> 2000 mg/kg (RT)	>2000 mg/kg (RT)	-
Arsenic Pentoxide 1303-28-2	69.3 mg/kg (RT)	1235 mg/Kg (RBT)	0.46 mg/L (RT) 4h

Note:
 RT = Rat
 RBT = Rabbit
 MSE = Mouse
 GP = Guinea Pig
 V = Vapour

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chemical Name	ACGIH	IARC	NTP	OSHA
Wood and Wood Dust NOT ASSIGNED	X	Group 1	X	X
Arsenic Pentoxide 1303-28-2	A1	Group 1	Known	X

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Numerical measures of toxicity - Product Information

ATEmix (oral)
 ATEmix (dermal)
 ATEmix (inhalation-gas)
 ATEmix (inhalation-dust/mist)
 ATEmix (inhalation-vapor)

Numerical measures of toxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Ammonium hydroxide (>10 %) 1336-21-6	-	8.2 mg/L LC50 96h (Pimephales promelas)	0.66 mg/L EC50 48h (Daphnia magna)
Cupric Oxide 1317-38-0	-	0.0384 mg/L LC50 96h (Pimephales promelas)	-
Zinc oxide 1314-13-2	0.044 mg/L EC50 72h (Pseudokirchneriella subcapitata)	0.112 mg/L LC50 96h (Thymallus articus)	>1.0 mg/L EC50 24h (Daphnia magna)
Arsenic Pentoxide 1303-28-2	10.5 mg/L EC50 72h (Pseudokirchneriella subcapitata)	17.3 mg/L LC50 96 h (Cyprinodon variegatus)	1.11 mg/L Ec50 48 h (Daphnia pulex)

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS**Waste treatment methods****Disposal of wastes**

DO NOT BURN TREATED WOOD. Do not use pressure treated chips or sawdust as mulch. Dispose of in accordance with local, state and federal regulations. This product is exempted as a hazardous waste under any sections of the RCRA regulations as long as the product is being utilized for its intended end use as stated in 40 CFR 261.4 (b) (9). State run hazardous waste programs may be more stringent. Dispose of in accordance with federal, state and local regulations.

Contaminated packaging

No information available.

Chemical Name	California Hazardous Waste Status
Ammonium hydroxide (>10 %) 1336-21-6	Toxic Corrosive
Cupric Oxide 1317-38-0	Toxic
Zinc oxide 1314-13-2	Toxic

14. TRANSPORT INFORMATION**DOT**

Not regulated

15. REGULATORY INFORMATION**US Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Arsenic Pentoxide - 1303-28-2	0.1

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Ammonium hydroxide (>10 %) 1336-21-6	1000 lb	-	-	X
Cupric Oxide 1317-38-0	-	X	-	-
Zinc oxide 1314-13-2	-	X	-	-
Arsenic Pentoxide 1303-28-2	1 lb	X	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Ammonium hydroxide (>10 %) 1336-21-6	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Arsenic Pentoxide 1303-28-2	1 lb	1 lb	RQ 1 lb final RQ RQ 0.454 kg final RQ

US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Wood and Wood Dust - NOT ASSIGNED	Carcinogen
Arsenic Pentoxide - 1303-28-2	Carcinogen Developmental

Warning: This wood contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Ammonium hydroxide (>10 %) 1336-21-6	X	X	X
Cupric Oxide 1317-38-0	X	-	X
Ammonium bicarbonate 1066-33-7	X	X	X
Zinc oxide	X	X	X

1314-13-2			
Arsenic Pentoxide 1303-28-2	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

Issue Date 27-May-2015

Revision Date 09-Dec-2021

Revision Note

No information available

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet



Additional Information

Western Wood Preservers Institute : www.wwpi.org

Railway Tie Association : RTA.org

Preserved Wood : wolmanizedwood.com

Learn more about crossties :
<https://www.conradfp.com/building-products-acza-cross-ties-switches.php>