

## NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA

Ref: 08-08-11-066

Note: the prompts given below are only a guide to the information required for approval. Dependent on the type of equipment or system that requires approval delete any section that is not applicable or include additional information if necessary. **Mandatory** fields are marked with an asterisk (\*).

1	<b>Equipment or System to be approved *</b> <b>Koppers Arch Wood Protection PTY LTD- CN Timber Protective Emulsion</b>							
2	<b>Originator *</b> Name: Boris Marynych Company: ARTC							
3	<b>Introduction *</b> To be used on Timber Bridge transoms to increase life cycle. CN Emulsion is formulated as a thick gel. This allows much more preservative to be applied directly to the timber than can normally be achieved with liquid products. Furthermore as it is formulated with a heavy non volatile oil, it forms a long lasting physical and chemical barrier against decay that resists leaching and weathering.							
4	<b>Determination of Need *</b> Timber transoms supplied are heart timbers and have severe cracks in the timber. While this is structurally acceptable the life of the transom is decreased by water ingress into the grain causing rotting. The CN emulsion will seal the cracks in the timber and expand and contract with the weather, thereby eliminating water ingress into the timber and extending the life of the transom. No similar product has been used in the past by the railway industry. The product has been used by the RTA on their timber bridges. This product was recommended by a Forestry Inspector.							
5	<b>Significant Change or Not (as determined by the Manager Standards &amp; Systems) *</b> This change in equipment or system is assessed as MINOR							
6	<b>Review Panel (as determined by the Manager Standards &amp; Systems) *</b> <ul style="list-style-type: none"> <li>John Cowie - Manager Standards &amp; Systems</li> <li>Tim Calver - Standards and Technical Services Engineer</li> <li>Wayne Potter - Geotechnical and Environmental Standards Engineer</li> </ul>							
7	<b>Safety</b> Track and Civil only- Refer attached product description and MSDS							
8	<b>Performance and Suitability</b> No Australian Standards for chemical treatment of timber. Not hazardous according to Worksafe Australia							
(i)	<b>Use in other rail networks</b> Product has been sold previously to RailCorp and Queensland Rail for treatment of timber bridges							
(ii)	<b>Issues arising from usage of the equipment/system</b> Application of product to follow manufacturer's guidelines.							
9	<b>Reliability</b> The product is a treatment and extension of transom life will depend on transom quality.							
10	<b>Maintainability</b> Once only application, but may need a second application at 5 years							
11	<b>Approval *</b> CN Timber Protective Emulsion is approved for use only on Bridge transoms: Number 1 viaduct: Wagga Wagga 516km to 517.8 km, Main South							
12	<b>Conditions of Approval *</b> For use on specific location only and subject to warning signs being affixed to handrailing warning persons working on the bridge in the specific location where the CN emulsion has been applied, that:- <ul style="list-style-type: none"> <li>Surface can be slippery underfoot and</li> <li>If ignited can give off large quantities of smoke</li> </ul> Also refer to MSDS - users must be made aware of safety precautions and PPE requirements must be included in the Prework Briefing							
13	<b>Does the Originator accept the additional Conditions of Approval as set by the Review Panel:</b>		Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	N/A	<input type="checkbox"/>

14 **Sign off**

**ARTC office use only**

**Review Panel:**

John Cowie

Tim Calver

Wayne Potter

*[Handwritten signatures]*

Date: 9.3.07

Date: 8/3/07

Date: 8/3/07

# CN Timber Protective Emulsion

## 1.0 DESCRIPTION

Active Constituent:	15g/kg Copper (Cu) present as copper naphthenate in mineral oil. Naphthenic acid value 230 average ( range 170 - 250).
Formulation:	Thickened oil-in-water emulsion with film forming ingredients
Appearance & Odour:	Light green gel-like paste with slight ammoniacal and oil odour.
pH:	8.5
Density:	0.90 kg/l @ 20°C
Viscosity:	High (>25,000 cp)
Flash Point:	>180°C (Abel Closed Cup)

## 2.0 FUNCTION

### 2.1 General

CN Timber Protective Emulsion (CN Emulsion) is intended for heavy duty protection of timber, and timber structures against fungal decay and borers, particularly in ground contact. Examples are for groundline treatment of poles, exposed endgrain, pile tops, bolt holes, interfaces and joints: any high hazard situations where exposure and dampness could promote decay. CN Emulsion does have a significant level of deterrence to certain species of termites although the product is not promoted as a termiticide as such. Users are advised that additional protective measures against termites may be required in some situations.

### 2.2 Mode of Action

CN Emulsion is formulated as a thick gel. This allows much more preservative to be applied directly to the timber than can normally be achieved with liquid products. Furthermore as it is formulated with a heavy non volatile oil, it forms a long lasting physical and chemical barrier against decay that resists leaching and weathering. On exposure to air the emulsion breaks. The water phase forms a continuous film at the external surface, whilst the oil phase is released from the emulsion. Any residual oil not immediately absorbed into the timber is trapped between the film and the timber. Depending on the condition of the timber, absorption of oil phase containing the copper naphthenate continues for approximately two weeks out of ground and for approximately three months in ground contact.

## 3.0 DIRECTIONS FOR USE

### 3.1 General

CN Emulsion can be applied by trowel, heavy brush, cartridge or by mechanical pumping. Clean up with warm water and detergent.

### 3.2 Timber surface preparation

For remedial treatment it is essential that any decayed wood be removed from the timber surface prior to application. For ground contact applications it is recommended that all non-pressure treated sapwood be removed in all cases.

### 3.3 Application

For pole groundline treatment, apply an even coating at least 6mm thick over the area to be protected. The normal recommendation is to coat the pole from approximately 450mm below ground to 100mm above ground. It is strongly recommended that for groundline treatment a wax or plastic coated paper or other light bandage material (ie. light plastic) is wrapped around the pole over the CN Emulsion application. The light bandage will maximise absorption into the pole and significantly enhance the performance of the product.

For above ground treatments (exposed end grain, pile tops) apply a coat up to 6mm thick over the full area requiring protection. A temporary bandage or covering may be required to prevent loss of product if rain is expected within 24 hours of application. For interfaces and timber joints apply a coat up to 3mm thick over the full area before joining.

### 3.4 After Treatment

On exposure to air the emulsion will darken and form a skin within a few hours. The oil component will continue to be absorbed and will creep along the timber grain. A dark green to black residue may remain and is easily scraped off. The timber itself, where treated, will change to a dark brown or black colour. Absorption may take up to two weeks out of ground contact.

### 3.5 Reapplication

Reapplication requirements will depend on the nature of the item being protected and the severity of the hazard. Extensive field testing has shown the CN Emulsion can provide protection from decay even in ground contact for over 10 years. In practice for ground contact situations such as utility poles, piles and other structures, reinspection is recommended after 5 years and re-application should be done at least every 10 years in most cases. Further information is available from Koppers-Hickson.

## 4.0 SAFETY AND HANDLING

### 4.1 Painting

Painting over timber treated with CN Timber Oil is not recommended.

# CN Timber Protective Emulsion

## 4.2 Metals, Fasteners and Others

CN Emulsion is not corrosive to mild steel, galvanised or other metals commonly used for timber fasteners and connections. In all cases for exterior timber work, galvanised nails and plates are recommended.

## 5.0 SAFETY AND HANDLING

### 5.1 General

Copper naphthenate is well recognised as a safe and effective timber preservative. For personal hygiene it is recommended that the following precautions be taken. A Material Safety Data Sheet is available on request for further information.

### 5.2 Handling the product

Oil resistant gloves should be worn when using the product. Excessive contact with the product can cause dryness and mild irritation to the skin. Wash hands with soap and water after use.

Eye protection should be used when there is a risk of spraying or splashing of the product (ie: pumping, spraying, working overhead). Contact with the eyes may cause moderate to severe irritation. If in the eyes, hold the eyes open and wash with plenty of water for at least 15 minutes and see a doctor.

The product uses very low volatility oils but care should be taken to avoid breathing any spray or mist resulting from application (ie: high pressure pumps). If swallowed give a glass of water and seek medical attention.

The product will stain clothing and animal hair eg. Wool.

### 5.3 Environmental Considerations

Avoid contamination of waterways and sewers as the product will form an oil pollution hazard.

## 6.0 STORAGE AND TRANSPORT

### 6.1 Storage

Store the product in the original closed container in a secure area. Avoid exposure to heat or direct sunlight as temperatures above 40°C may contribute to emulsion breakdown.

### 6.2 Transport

This product is exempt from dangerous goods classification.

## 7.0 PACKAGING

20 litre drum

200 litre drum

Other packaging options can be discussed on application

## STATEMENT OF HAZARDOUS NATURE

Not hazardous according to criteria of Worksafe Australia

## COMPANY DETAILS

Company KOPPERS ARCH WOOD PROTECTION (AUST) PTY LIMITED  
 ABN 95 003 780 872  
 Address 15 Blue Street, North Sydney, NSW, 2060.  
 Telephone Number (02) 9954 5433  
 Fax (02) 9954 5467  
 Emergency Telephone Number (02) 4967 4777 (24 hours)

## IDENTIFICATION

Product Name **CN TIMBER PROTECTIVE EMULSION**  
 Other Names CN, CN Emulsion  
 Manufacturers Product Code  
 UN Number  
 Dangerous Goods Class Not a Dangerous Good  
 Hazchem Code  
 Poisons Schedule 5  
 Uses Remedial preservative to protect timber against fungal and insect attack.  
 Used particularly for the groundline protection of wood utility poles.

## Physical Description /Properties

Appearance & Odour Light green paste/gel, slight ammonia and oily odour  
 Boiling Point oC 100  
 Vapour Pressure Low  
 Flashpoint 180 °C (Closed cup)  
 Flammability Limits Not determined  
 Solubility in Water Emulsifies/disperses

## Other Properties

Vapour Density Not applicable  
 Viscosity >25,00cps @ 20 °C  
 pH 8 ± 0.5  
 Specific Gravity 0.95  
 Volatile Content Not applicable

## Ingredients

	Chemical Name	CAS Number	Proportion %m/m
Active ingredient	Copper naphthenate	1338-02-9	10 - 30
Inerts	Mineral oil hydrocarbons	8012-95-1	30 - 60
	Casein	9000-71-9	< 1
	Ammonia	7664-41-7	< 1
	Water	7732-18-5	10 - 30

## HEALTH HAZARD INFORMATION

### Health Effects

#### *Acute*

Swallowed	Harmful if swallowed. May cause gastrointestinal irritation, cramps, chills and nausea.
Eye	May cause slight to moderate temporary irritation.
Skin	May cause dryness or temporary irritation. May be absorbed through intact skin.
Inhaled	Unlikely under normal conditions due to high viscosity and low volatility of product. Inhalation of spray mist may irritate the respiratory tract. May cause headache, dizziness, irregular breathing, confusion and collapse from oxygen deprivation.

#### *Chronic*

May cause dry and irritated skin or dermatitis.

### First Aid

Swallowed	Do not induce vomiting. Give a glass of water and seek medical attention.
Eye	Hold eyes open and flush with plenty of water for at least 15 minutes and see a doctor
Skin	Remove contaminated clothing and wash affected area with soap and water.
Inhaled	Remove person to fresh air and observe breathing.
First Aid Facilities	Eye wash, hand wash.
<b>Advice to Doctor</b>	Treat symptomatically.

## PRECAUTIONS FOR USE

Exposure Standards	Exposure limit standards for some of the constituents of this preparation are as follows:
	Constituents: mg/m <sup>3</sup> TWA
	Mineral Oils (mist) 5
	Copper (dust or fume) 1
	Ammonia 17
Engineering Controls	Ensure adequate ventilation, particularly if application involves generation of vapour.
Personal Protection	Use good occupational work practices. Skin absorption and breathing of vapour may be significant routes of exposure. Avoid contact with the product. Oil resistant gloves and overalls are recommended for handling product or contaminated application equipment. If working in an enclosed space or where exposure to fumes is likely to exceed recommended values, use breathing mask with organic filter canisters. Wash hands after use.

## SAFE HANDLING INFORMATION

Storage and Transport	Not classified as Dangerous Good. Store in the original container in a secure place away from direct sunlight and with the lid tightly closed. Keep away from children.
Spills and Disposal	Absorb spill with sand, saw dust, vermiculite, or other inert absorbent. Spills should not spread due to high viscosity. Contaminated surfaces may be slippery. Bury clean-up and absorbent materials in an approved landfill in accordance with state and/or local government regulations. Do not dispose of product down drains, sewers or water courses. Do not use empty containers for food or water storage. Crush and bury empty containers.
Fire/Explosion Hazard	The product is not flammable but may be combustible. During combustion and strong heating the product may evolve dense fumes. Combustion may also produce CO and CO <sub>2</sub> and copper fumes. Fire fighters should use full breathing apparatus for fire fighting. Fire exposed containers may build up pressure. Extinguish fire with water, fog, foam, carbon dioxide or dry chemical. Avoid spreading product with water jets. Use water spray to cool product containers.

## OTHER INFORMATION

Environmental Protection	Do not contaminate drains, sewers, streams, rivers or other water bodies with the product, used containers or washings from application equipment. Normal use is not expected to result in notifiable contamination or residue in rural or agricultural situations.
Animal Toxicity Data	Animal toxicity data is not available for the product. Toxicity data for some of the constituents are as follows: <u>Copper naphthenate</u> LD <sub>50</sub> oral and dermal in the rat >6000mg/kg Ames test negative <u>Solvent</u> (based on testing of similar products) - Oral Toxicity, rat = slightly toxic Dermal Toxicity, rabbit = slightly toxic Genetic Toxicity, negative Reproductive Toxicity, rat = negative (up to 400 ppm).
General	The product may permanently stain wool and clothing.

## CONTACT POINT

Technical Manager,  
Koppers Arch Wood Protection Pty. Ltd. Station St, Trentham, 3458, Vic  
tel (03) 5424 1350, Fax (03) 5424 1288