

OSMOSE PROTIM RESEAL SUPPLEMENTARY TIMBER PROTECTIVE

ChemWatch Material Safety Data Sheet

Issue Date: Wed 10-Oct-2001

CHEMWATCH 65228

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

OSMOSE PROTIM RESEAL SUPPLEMENTARY TIMBER PROTECTIVE

SYNONYMS

supplementary timber treatment copper, chrome, borate wood treatment

PROPER SHIPPING NAME

PESTICIDE, SOLID, TOXIC, N.O.S. (contains sodium dichromate)

PRODUCT USE

Timber preservative.

SUPPLIER

Company: Osmose Australia P/L

Address:

Cafrpirco Road Abn: 75 088 260 575

Mt Gambier

SA, 5290

AUS

Telephone: (+61 8) 8723 1399

Emergency Tel: 1800 039 008 (24 hours)

Emergency Tel: +61 3 9573 3112

Fax: 08 8723 0010

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

According to the Criteria of NOHSC, and the ADG Code.

POISONS SCHEDULE

S6

RISK

Harmful in contact with skin.

Very toxic by inhalation and if swallowed.

Danger of cumulative effects.

Irritating to eyes.

May cause SENSITISATION by skin contact.

May cause heritable genetic damage.

Harmful: danger of serious damage to health by prolonged exposure through

continued...

Section 2 - HAZARDS IDENTIFICATION ...

inhalation.
 May cause CANCER by inhalation.
 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 May produce discomfort of the respiratory system and skin*.
 Possible respiratory sensitiser*.
 * (limited evidence)

SAFETY

Keep locked up.
 Keep container in a well ventilated place.
 Avoid exposure - obtain special instructions before use.
 To clean the floor and all objects contaminated by this material, use water.
 This material and its container must be disposed of in a safe way.
 Keep away from food, drink and animal feeding stuffs.
 Take off immediately all contaminated clothing.
 In case of accident or if you feel unwell IMMEDIATELY contact Doctor or Poisons Information Centre (show label if possible).
 In case of accident by inhalation: remove casualty to fresh air and keep at rest.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
boric acid	10043-35-3	40-50
sodium dichromate	10588-01-9	10-20
copper sulfate, pentahydrate	7758-99-8	10-20
inert, soluble salts unspecified		NotSpec

Section 4 - FIRST AID MEASURES

SWALLOWED

- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
 - For advice, contact a Poisons Information Centre or a doctor.
 - Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
 - For advice, contact a Poisons Information Centre or a doctor.
 - Urgent hospital treatment is likely to be needed.
 - If conscious, give water to drink.
 - INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS.
- Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- NOTE: Wear a protective glove when inducing vomiting by mechanical means.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
 - If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
 - If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

Section 4 - FIRST AID MEASURES ...

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
- Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to dichromates and chromates:

- Absorption occurs from the alimentary tract and lungs.
- The kidney excretes about 60% of absorbed chromate within 8 hours of ingestion. Urinary excretion may take up to 14 days.
- Establish airway, breathing and circulation. Assist ventilation.
- Induce emesis with Ipecac Syrup if patient is not convulsing, in coma or obtunded and if the gag reflex is present.
- Otherwise use gastric lavage with endotracheal intubation.
- Fluid balance is critical. Peritoneal dialysis, haemodialysis or exchange transfusion may be effective although available data is limited.
- British Anti-Lewisite, ascorbic acid, folic acid and EDTA are probably not effective.
- There are no antidotes.
- Primary irritation, including chrome ulceration, may be treated with ointments comprising calcium-sodium-EDTA. This, together with the use of frequently renewed dressings, will ensure rapid healing of any ulcer which may develop. The mechanism of action involves the reduction of Cr (VI) to Cr(III) and subsequent chelation; the irritant effect of Cr(III)/ protein complexes is thus avoided. [ILO Encyclopedia]
[Ellenhorn and Barceloux: Medical Toxicology]

Section 5 - FIRE FIGHTING MEASURES

Section 5 - FIRE FIGHTING MEASURES ...

EXTINGUISHING MEDIA

Dry agent.
Carbon dioxide.
Bromochlorodifluoromethane (BCF) (where regulations permit).

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Consider evacuation (or protect in place).
- Fight fire from a safe distance, with adequate cover.
- Extinguishers should be used only by trained personnel.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- If fire gets out of control withdraw personnel and warn against entry.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Will not burn but increases intensity of fire.
 - Heating may cause expansion or decomposition leading to violent rupture of containers.
 - Heat affected containers remain hazardous.
 - Contact with combustibles such as wood, paper, oil or finely divided metal may produce spontaneous combustion or violent decomposition.
 - May emit irritating, poisonous or corrosive fumes.
- Decomposes on heating and produces toxic fumes of metal oxides

FIRE INCOMPATIBILITY

Avoid contact with reducing agents

HAZCHEM

2X

Personal Protective Equipment

Glasses:
Chemical goggles.

Gloves:
1.BUTYL 2.NEOPRENE 3.NITRILE

Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

Section 6 - ACCIDENTAL RELEASE MEASURES ...

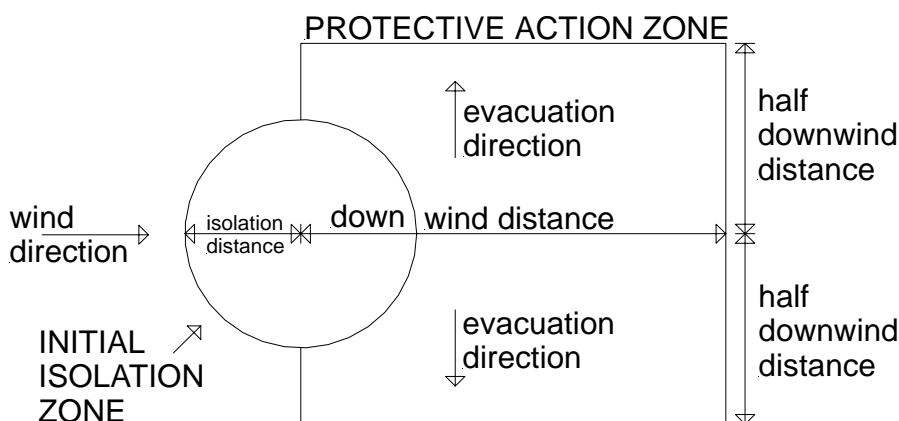
MINOR SPILLS

- Clean up all spills immediately.
- No smoking, naked lights, ignition sources.
- Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
- Avoid breathing dust or vapours and all contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with dry sand, earth, inert material or vermiculite.
- DO NOT use sawdust as fire may result.
- Scoop up solid residues and seal in labelled drums for disposal.
- Neutralise/decontaminate area.

MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Prevent spillage from entering drains or water courses.
- Consider evacuation (or protect in place).
- DO NOT use water on spill.
- No smoking, flames or ignition sources.
- Increase ventilation.
- Contain with DRY sand, earth or other clean, dry inert material.
- NEVER use organic absorbents such as sawdust, paper, cloth or wet materials.
- Use spark-free and explosion-proof equipment.
- Collect recoverable product in labelled containers for possible recycling.
- To avoid risk of contamination, DO NOT mix recovered with fresh material.
- Absorb remaining product with dry sand, earth or vermiculite.
- Collect residues and seal in labelled drums for disposal.
- Use flooding quantities of water to wash area.
- Prevent runoff into drains.
- If contamination of drains or waterways occurs advise emergency services.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance	25 metres
Downwind Protection Distance	250 metres
IERG Number	34

FOOTNOTES

- 1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the

Section 6 - ACCIDENTAL RELEASE MEASURES ...

- predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
- 2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
- 3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
- 4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".
LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
- 5 Guide 151 is taken from the US DOT emergency response guide book.
- 6 IERG information is derived from CANUTEC - Transport Canada.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

other than mild, transient adverse effects without perceiving a clearly defined odour is:

American Industrial Hygiene Association (AIHA)

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid personal contact and inhalation of dust, mist or vapours.
- Provide adequate ventilation.
- Always wear protective equipment and wash off any spillage from clothing.
- Keep material away from light, heat, flammables or combustibles.
- Keep cool, dry and away from incompatible materials.
- Avoid physical damage to containers.
- DO NOT repack or return unused portions to original containers. Withdraw only sufficient amounts for immediate use.
- Contamination can lead to decomposition leading to possible intense heat and fire.
- When handling NEVER smoke, eat or drink.
- Always wash hands with soap and water after handling.
- Use only good occupational work practice.
- Observe manufacturer's storing and handling directions.

continued...

Section 7 - HANDLING AND STORAGE ...

SUITABLE CONTAINER

- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

Store away from incompatible materials.
Avoid contact with aluminium, magnesium, charcoal, fluorine, sulfur, many combustible substances and reducing agents.
Keep storage area free of debris, waste and combustibles.

STORAGE REQUIREMENTS

- Keep dry
- Store in original containers.
 - Keep containers securely sealed as supplied.
 - No smoking, naked lights, heat or ignition sources.
 - Store in a cool, dry, well ventilated area.
 - Store under cover and away from sunlight.
 - Store below safe storage (control) temperature.
 - Store away from flammable or combustible materials, debris and waste.
 - Contact may cause fire or violent reaction.
 - Store away from incompatible materials.
 - Store away from foodstuff containers
 - DO NOT stack on wooden floors or wooden pallets.
 - Protect containers against physical damage, FRICTION or SHOCK.
 - Check regularly for spills and leaks.
 - Observe manufacturer's storage and handling recommendations.
 - Restrictions may apply on quantities and to other material permitted in the same location.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

None assigned. Refer to individual constituents.

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) :0.2118 mg/m³.

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc (%)

Component	Breathing Zone (mg/m ³)	Mixture Conc (%)
sodium dichromate	0.0471	20.0
copper sulfate, pentahydrate	0.0471	20.0

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

boric acid	0.1176	50.0
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INGREDIENT DATA

BORIC ACID:

Dusts not otherwise classified, as inspirable dust;
 ES TWA: 10 mg/m³
 MAK value: 15 mg/m³
 - as total dust: collected by a sampler with a suction velocity of 1.25 m/s +/- 10%.
 MAK Category II Peak Limitation: For substances with systemic effects and with a half-life in humans ranging from two hours to shift-length.
 Allows excursions of 5 times the MAK value, for 30 minutes (on average), twice per shift.
 MAK values, and categories and groups are those recommended within the Federal Republic of Germany

SODIUM DICHROMATE:

chromium (VI) compounds, water soluble, as Cr (A.Wt: 51.99)
 ES TWA: 0.05 mg/m³ SENSITISER
 TLV TWA: 0.05 mg/m³, A1
 WARNING: This substance has been classified by the ACGIH as A1 CONFIRMED HUMAN CARCINOGEN
 MEL TWA: 0.05 mg/m³
 IDLH Level: 15 mg/m³
 Some jurisdictions require that health surveillance be carried on workers occupationally exposed to inorganic chromium. Such surveillance should emphasise
 - demography, occupational and medical history and health advice
 - physical examination with emphasis on the respiratory system and skin
 - weekly skin inspection of hands and forearms by a "responsible person"
 TRK: 0.1 mg/m³ including lead chromate (as dusts/aerosols) with the exception of compounds practically insoluble in water such as barium chromate
 - for manual arc welding with coated electrodes
 - production of soluble chromium(VI) compounds
 TRK: 0.5 mg/m³ - others measured as inhalable fraction of the aerosol
 The technical exposure limit, TRK (Technische Richtkonzentrationen), defines the airborne concentration of named carcinogenic materials which is the minimum possible given the state of current technologies. TRK values are assigned only for materials for which there is no current MAK (German exposure standard). Observance of the TRK value is intended to reduce the risk of adverse effects on health but does NOT completely eliminate it. Since no threshold doses can be determined for carcinogens, health considerations require that the exposure limits be kept as far as possible below the TRK and that the TRK value be gradually reduced. The limitation of exposure peaks is regulated as follows;
 Short-term exposure limit: 5 x TRK
 Short-term exposure duration: 15 min/average
 Frequency per work shift: 5 times
 Interval: 1 hour.
 Report No. 35 1999, Deutsche Forschungsgemeinschaft.
 WARNING: This substance is classified by the NOHSC as Category 2 Probable Human Carcinogen

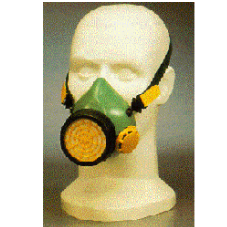
COPPER SULFATE, PENTAHYDRATE:

copper dusts and mists, as Cu (A.Wt: 63.54)
 ES TWA: 1 mg/m³
 TLV TWA: 1 mg/m³
 OES TWA: 1 mg/m³; STEL: 2 mg/m³
 copper fume, as Cu

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

ES-TWA: 0.2 mg/m³
TLV-TWA: 0.2 mg/m³
OES-TWA: 0.2 mg/m³
IDLH Level: 100 mg/m³ (fume)

PERSONAL PROTECTION



EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS/FEET

Impervious gloves
PVC gloves
Rubber gloves
Safety footwear

OTHER

Overalls
• Impervious apron
• Eyewash unit.
Ensure there is ready access to a safety shower

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts	2.5-10 m/s (500-2000 f/min.)

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

(released at high initial velocity into zone of very high rapid air motion).

Within each range the appropriate value depends on:

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Off-white to brown powder with a sharp irritating sensation in the nose and eyes; mixes with water to form orange to brown solutions.

PHYSICAL PROPERTIES

Solid.
Mixes with water.

Molecular Weight: Not applicable
Melting Range (°C): Not available
Solubility in water (g/L): Miscible
pH (1% solution): 3.0-4.0
Volatile Component (%vol): Not applicable
Relative Vapour Density (air=1): Not applicable
Lower Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not applicable
State: Divided solid

Boiling Range (°C): Not available
Specific Gravity (water=1): 1.5
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not applicable
Evaporation Rate: Not applicable
Flash Point (°C): Not applicable
Upper Explosive Limit (%): Not applicable
Decomposition Temp (°C):

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.

continued...

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION ...

- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS SWALLOWED

The solid is extremely discomforting and corrosive to the gastro-intestinal tract and may be toxic if swallowed
Considered an unlikely route of entry in commercial/industrial environments

EYE

The material is highly discomforting and corrosive to the eyes and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated

SKIN

The material is discomforting to the skin and is capable of causing chemical burns , allergic skin reactions and skin sensitisation
Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.
Toxic effects may result from skin absorption
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

INHALED

Not normally a hazard due to non-volatile nature of product
The solid/dust is extremely discomforting and corrosive and to the upper respiratory tract repeated exposure may cause sensitisation and/or allergic reactions
Respiratory sensitisation may result in allergic/asthma like responses; from coughing and minor breathing difficulties to bronchitis with wheezing, gasping.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by skin contact / eye contact and inhalation of generated dust The material may accentuate any pre-existing skin condition Sensitisation may give severe responses to very low levels of exposure, i.e. hypersensitivity. Sensitised persons should not be allowed to work in situations where exposure may occur. Skin contact may result in severe irritation particularly to broken skin. Ulceration known as "chrome ulcers" may develop. Chrome ulcers and skin cancer are significantly related. Chromium VI exposures have been related to higher incidence of lung cancer. Chromium (III) is an essential trace mineral. Chronic exposure to chromium (III) irritates the airways, malnourishes the liver and kidneys, causes fluid in the lungs, and adverse effects on white blood cells, and also increases the risk of developing lung cancer. Chromium (VI) can irritate the skin, eyes and airways. Allergic reactions can involve both the skin and airways, and the compounds can diminish taste and smell, discolour the skin and eyes, cause blood disorders and damage the liver, kidneys, digestive tract and lungs. It predisposes humans to cancers of the respiratory tract and digestive system. Ulceration to the skin can occur, and, chromium (VI) is one of the most allergenic substances known.

Osmose Protim Reseal Supplementary Timber Protective

Not available. Refer to individual constituents.
unless otherwise specified data extracted from RTECS - Register of Toxic Effects

continued...

Section 11 - TOXICOLOGICAL INFORMATION ...

of Chemical Substances

BORIC ACID:

TOXICITY

Oral (woman) LDLo: 200 mg/kg
Oral (rat) LD50: 2660 mg/kg
Inhalation (rat) LCLo: 28 mg/m³/4h
Dermal (man) LDLo: 2430 mg/kg

IRRITATION

Skin (human): 15 mg/3d -I- mild

SODIUM DICHROMATE:

TOXICITY

Oral (human) LDLo: 50 mg/kg
Oral (human) TDLo: 250 mg/kg
Oral (rat) LD50: 50 mg/kg

IRRITATION

Material is a corrosive irritant.

WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS.

COPPER SULFATE, PENTAHYDRATE:

TOXICITY

Oral (human) LDLo: 1088 mg/kg
Oral (human) TDLo: 272 mg/kg
Oral (rat) LD50: 300 mg/kg
Dermal (rat) LD50: > 2000 mg/kg

IRRITATION

Nil reported

Section 12 - ECOLOGICAL INFORMATION

No data for Osmose Protim Reseal Supplementary Timber Protective.
Refer to data for ingredients, which follows:

BORIC ACID:

Hazardous Air Pollutant: No
Fish LC50 (96hr.) (mg/l): 79-100
Daphnia magna EC50 (48hr.) (mg/l): 115-153

SODIUM DICHROMATE:

Hazardous Air Pollutant: No
Fish LC50 (96hr.) (mg/l): 18-133
Algae IC50 (72hr.) (mg/l): 0.58
Hazardous Air Pollutant: No

Toxicity Fish: non tox 5mg/L (24)

Nitrif. inhib. : 75% inhib at 23mg/L

Chromium in the oxidation state +3 (the trivalent form) is poorly absorbed by cells found in microorganisms, plants and animals. Chromate anions (CrO₄⁻, oxidation state +6, the hexavalent form) are readily transported into cells and toxicity is closely linked to the higher oxidation state.

Chromium Ecotoxicology:

Toxicity in Aquatic Organisms:

Chromium is harmful to aquatic organisms in very low concentrations. Fish food organisms are very sensitive to low levels of chromium. Chromium is toxic to fish although less so in warm water. Marked decreases in toxicity are found with increasing pH or water hardness; changes in salinity have little if any effect. Chromium appears to make fish more susceptible to infection. High concentrations can damage and/or accumulate in various fish tissues and in invertebrates such as snails and worms.

Reproduction of Daphnia is affected by exposure to 0.01 mg/kg hexavalent chromium/litre

continued...

Section 12 - ECOLOGICAL INFORMATION ...

Toxicity of chromium in fresh-water organisms (50% mortality)*

Compound	Category	Exposure	Toxicity Range (mg/litre)	Most sensitive species
hexavalent chrome	invertebrate	acute	0.067-59.9	scud
		long-term	-	-
	vertebrate	acute	17.6-249	fathead minnow
trivalent chrome	invertebrate	long-term	0.265-2.0	rainbow trout
		acute	2.0-64.0	cladoceran
	vertebrate	long-term	0.066	cladoceran
		acute	33.0-71.9	guppy
	invertebrate	long-term	1.0	fathead minnow

* from Environmental Health Criteria 61: WHO Publication.

Toxicity in Microorganisms:

In general, toxicity for most microorganisms occurs in the range of 0.05-5 mg chromium/kg of medium. Trivalent chromium is less toxic than the hexavalent form. The main signs of toxicity are inhibition of growth and the inhibition of various metabolic processes such as photosynthesis or protein synthesis. Gram-negative soil bacteria are generally more sensitive to hexavalent chromium (1-12 mg/kg) than the gram-positive types. Toxicity to trivalent chromium is not observed at similar levels. The toxicity of low levels of hexavalent chromium (1 mg/kg) indicates that soil microbial transformation, such as nitrification, may be affected. Chromium should not be introduced to municipal sewage treatment facilities.

Toxicity in Plants: Chromium in high concentrations can be toxic for plants. The main feature of chromium intoxication is chlorosis, which is similar to iron deficiency. Chromium affects carbohydrate metabolism and leaf chlorophyll concentration decreases with hexavalent chromium concentration (0.01-1 mg/l). The hexavalent form appears to more toxic than the trivalent species.

Biological half-life: The elimination curve for chromium, as measured by whole-body counting, has an exponential form. In rats, three different components of the curve have been identified, with half-lives of 0.5, 5.9 and 83.4 days, respectively.

Water Standards: Chromium is identified as a hazardous substance in the Federal (U.S.) Water Pollution Control Act and further regulated by Clean Air Water Act Amendments (US). These regulations apply to discharge. The US Primary drinking water Maximum Contaminant Level (MCL), for chromium, is 0.05 mg/l (total chromium).

COPPER SULFATE, PENTAHYDRATE:

The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)
Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards:
1993 Commission of the European Communities

Ecotoxicology:

Fish LC50 (96 hr): Rainbow trout, Harlequin fish, goldfish, eel:
0.1-2.5 mg/l*

Daphnia magna LC50 (48 h): 24 ug/l*

*[The Dictionary of Substances and their Effects (Ed Richardson M.L.)]

Oral (wild bird) LD50: 300 mg/kg

Oral (duck) LD50: 600 mg/kg

Very toxic to aquatic organisms.

continued...

Section 12 - ECOLOGICAL INFORMATION ...

Copper is unlikely to accumulate in the atmosphere due to a short residence time for airborne copper aerosols. Airborne coppers, however, may be transported over large distances. Copper accumulates significantly in the food chain.

Drinking Water Standards:
3000 ug/l (UK max)
2000 ug/l (WHO provisional Guideline)
1000 ug/l (WHO level where individuals complain)
Soil Guidelines: Dutch Criteria
36 mg/kg (target)
190 mg/kg (intervention)
Air Quality Standards: no data available.

The toxic effect of copper in the aquatic biota depends on the bio-availability of copper in water which, in turn, depends on its physico-chemical form (ie.speciation). Bioavailability is decreased by complexation and adsorption of copper by natural organic matter, iron and manganese hydrated oxides, and chelating agents excreted by algae and other aquatic organisms. Toxicity is also affected by pH and hardness. Total copper is rarely useful as a predictor of toxicity. In natural sea water, more than 98% of copper is organically bound and in river waters a high percentage is often organically bound, but the actual percentage depends on the river water and its pH.

Copper exhibits significant toxicity in some aquatic organisms. Some algal species are very sensitive to copper with EC50 (96 hour) values as low as 47 ug/litre dissolved copper whilst for other algal species EC50 values of up to 481 ug/litre have been reported. However many of the reportedly high EC50 values may arise in experiments conducted with a culture media containing copper-complexing agents such as silicate, iron, manganese and EDTA which reduce bioavailability.
Toxic effects arising following exposure by aquatic species to copper are typically:

Algae EC50 (96 h)	Daphnia magna LC50 (48-96 h)	Amphipods LC50 (48-96 h)	Gastropods LC50 (48-96 h)	Crab larvae LC50 (48-96 h)
47-481 *	7-54 *	37-183 *	58-112 *	50-100 *

* ug/litre
Exposure to concentrations ranging from one to a few hundred micrograms per litre has led to sublethal effects and effects on long-term survival. For high bioavailability waters, effect concentrations for several sensitive species may be below 10 ug Cu/litre.
In fish, the acute lethal concentration of copper ranges from a few ug/litre to several mg/litre, depending both on test species and exposure conditions. Where the value is less than 50 ug Cu/litre, test waters generally have a low dissolved organic carbon (DOC) level, low hardness and neutral to slightly acidic pH. Exposure to concentrations ranging from one to a few hundred micrograms per litre has led to sublethal effects and effects on long-term survival. Lower effect concentrations are generally associated with test waters of high bioavailability.
In summary:

TABLE BORDER><TD>RESPONSES EXPECTED FOR HIGH CONCENTRATION RANGES OF COPPER /TABLE

Total dissolved Cu concentration range (ug/litre)	Effects of high availability in water
1-10	Significant effects are expected for

Section 12 - ECOLOGICAL INFORMATION ...

10-100	<p>diatoms and sensitive invertebrates, notably cladocerans. Effects on fish could be significant in freshwaters with low pH and hardness.</p> <p>Significant effects are expected on various species of microalgae, some species of macroalgae, and a range of invertebrates, including crustaceans, gastropods and sea urchins. Survival of sensitive fish will be affected and a variety of fish show sublethal effects.</p>
100-1000	<p>Most taxonomic groups of macroalgae and invertebrates will be severely affected. Lethal levels for most fish species will be reached.</p>
>1000	<p>Lethal concentrations for most tolerant organisms are reached.</p>

* Sites chosen have moderate to high bioavailability similar to water used in most toxicity tests.

In soil, copper levels are raised by application of fertiliser, fungicides, from deposition of highway dusts and from urban, mining and industrial sources. Generally, vegetation rooted in soils reflects the soil copper levels in its foliage. This is dependent upon the bioavailability of copper and the physiological requirements of species concerned.

Typical foliar levels of copper are:

Uncontaminated soils (0.3-250 mg/kg)	Contaminated soils (150-450 mg/kg)	Mining/smelting soils
6.1-25 mg/kg	80 mg/kg	300 mg/kg

Plants rarely show symptoms of toxicity or of adverse growth effects at normal soil concentrations of copper. Crops are often more sensitive to copper than the native flora, so protection levels for agricultural crops range from 25 mg Cu/kg to several hundred mg/kg, depending on country. Chronic and or acute effects on sensitive species occur at copper levels occurring in some soils as a result of human activities such as copper fertiliser addition, and addition of sludge.

When soil levels exceed 150 mg Cu/kg, native and agricultural species show chronic effects. Soils in the range 500-1000 mg Cu/kg act in a strongly selective fashion allowing the survival of only copper-tolerant species and strains. At 2000 Cu mg/kg most species cannot survive. By 3500 mg Cu/kg areas are largely devoid of vegetation cover. The organic content of the soil appears to be a key factor affecting the bioavailability of copper.

On normal forest soils, non-rooted plants such as mosses and lichens show higher copper concentrations. The fruiting bodies and mycorrhizal sheaths of soil fungi associated with higher plants in forests often accumulate copper to much higher levels than plants at the same site. International Programme on Chemical Safety (IPCS): Environmental Health Criteria 200

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible.

Consult manufacturer for recycling options.

Consult State Land Waste Management Authority for disposal.

Treat and neutralise at an effluent treatment plant.

Reduce Cr (VI) to Cr (III) using meta-bisulfite, neutralise with lime and reclaim sludge.

Section 13 - DISPOSAL CONSIDERATIONS ...

Bury residue in an authorised landfill.
Decontaminate empty containers.
Return containers to drum reconditioner or recycler.

Section 14 - TRANSPORTATION INFORMATION



Shipping Name:
PESTICIDE, SOLID, TOXIC, N.O.S.
(contains sodium dichromate)
Dangerous Goods Class: 6.1
UN/NA Number: 2588
ADR Number: 66
Packing Group: II
Labels Required: toxic
Additional Shipping Information:
International Transport Regulations:
IMO: 6.1

HAZCHEM

2X

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

S6

REGULATIONS

Australian Inventory of Chemical Substances (NICNAS) applies to the following ingredients:
boric acid (CAS: 10043-35-3)
sodium dichromate (CAS: 10588-01-9)
copper sulfate, pentahydrate (CAS: 7758-99-8)
boric acid (CAS: 10043-35-3)
boric acid (CAS: 11113-50-1) is found on the following regulatory lists: applies to the following ingredients:
boric acid (CAS: 10043-35-3)
Australian Inventory of Chemical Substances (NICNAS) applies to the following ingredients:
boric acid (CAS: 10043-35-3)
sodium dichromate (CAS: 7789-12-0)
boric acid (CAS: 10043-35-3)
No data available for boric acid (CAS: 41685-84-1). applies to the following ingredients:
boric acid (CAS: 10043-35-3)

OSMOSE PROTIM RESEAL SUPPLEMENTARY TIMBER PROTECTIVE

ChemWatch Material Safety Data Sheet

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Section 16 - OTHER INFORMATION

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