



AN ESAB BRAND

CIGWELD Comweld Comcoat T

Cigweld Pty Ltd

Chemwatch: 17944

Version No: 5.1

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Chemwatch Hazard Alert Code: 4

Issue Date: 23/12/2022

Print Date: 31/01/2023

L.GHS.AUS.EN.E

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	CIGWELD Comweld Comcoat T
Chemical Name	Not Applicable
Synonyms	Not Available
Chemical formula	Not Applicable
Other means of identification	321236, 322207

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Flux coated bronze filler rod for oxy-acetylene gas flame braze-welding and fusion welding of brass, bronze etc. Commonly used for braze welding of copper and alloys. Not recommended for braze welding of ferrous materials, however many customers successfully braze weld mild steel for low stress applications.
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Details of the manufacturer or supplier of the safety data sheet

Registered company name	Cigweld Pty Ltd
Address	71 Gower Street Victoria 3072 Australia
Telephone	+613 9474 7400 +1 1300 654 674
Fax	Not Available
Website	www.cigweld.com.au
Email	Not Available

Emergency telephone number

Association / Organisation	Not Available
Emergency telephone numbers	Not Available
Other emergency telephone numbers	Not Available




SECTION 2 Hazards identification

Classification of the substance or mixture

HAZARDOUS CHEMICAL. NON-DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

Chemwatch Hazard Ratings

CIGWELD Comweld Comcoat T

	Min	Max
Flammability	0	
Toxicity	2	
Body Contact	1	
Reactivity	0	
Chronic	4	

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
Classification [1]	Serious Eye Damage/Eye Irritation Category 2A, Acute Toxicity (Inhalation) Category 4, Carcinogenicity Category 1A, Hazardous to the Aquatic Environment Acute Hazard Category 3, Hazardous to the Aquatic Environment Long-Term Hazard Category 1
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

Label elements

Hazard pictogram(s)	
Signal word	Danger

Hazard statement(s)

H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H350	May cause cancer.
H402	Harmful to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, eye protection and face protection.
P261	Avoid breathing dust/fumes.

Precautionary statement(s) Response

P308+P313	IF exposed or concerned: Get medical advice/ attention.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
P337+P313	If eye irritation persists: Get medical advice/attention.

Precautionary statement(s) Storage

P405	Store locked up.
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Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
Not Available		wire comprising

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CIGWELD Comweld Comcoat T

CAS No	%[weight]	Name
7440-50-8	63	<u>copper</u>
7440-66-6	36.5	<u>zinc</u>
7440-31-5	0.5	<u>tin</u>
Not Available		coated with flux comprising
10043-35-3		<u>boric acid</u>
7775-19-1		<u>sodium metaborate</u>
Not Available		in use generates
Not Available	>60	<u>welding fumes</u>
Not Available		as
7440-50-8.		<u>copper fume</u>
1314-13-2		<u>zinc oxide fume</u>
7440-31-5		<u>tin fume</u>

Legend: 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	<ul style="list-style-type: none"> Particulate bodies from welding spatter may be removed carefully. DO NOT attempt to remove particles attached to or embedded in eye. Lay victim down, on stretcher if available and pad BOTH eyes, make sure dressing does not press on the injured eye by placing thick pads under dressing, above and below the eye. Seek urgent medical assistance, or transport to hospital.
Skin Contact	<p>In case of burns:</p> <ul style="list-style-type: none"> Quickly immerse affected area in cold running water for 10 to 15 minutes. Bandage lightly with a sterile dressing. Treat for shock if required. Lay patient down. Keep warm and rested. Transport to hospital, or doctor.
Inhalation	<ul style="list-style-type: none"> 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.
Ingestion	Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastro-intestinal tract

Indication of any immediate medical attention and special treatment needed

Copper, magnesium, aluminium, antimony, iron, manganese, nickel, zinc (and their compounds) in welding, brazing, galvanising or smelting operations all give rise to thermally produced particulates of smaller dimension than may be produced if the metals are divided mechanically. Where insufficient ventilation or respiratory protection is available these particulates may produce "metal fume fever" in workers from an acute or long term exposure.

- Onset occurs in 4-6 hours generally on the evening following exposure. Tolerance develops in workers but may be lost over the weekend. (Monday Morning Fever)
- Pulmonary function tests may indicate reduced lung volumes, small airway obstruction and decreased carbon monoxide diffusing capacity but these abnormalities resolve after several months.
- Although mildly elevated urinary levels of heavy metal may occur they do not correlate with clinical effects.
- The general approach to treatment is recognition of the disease, supportive care and prevention of exposure.
- Seriously symptomatic patients should receive chest x-rays, have arterial blood gases determined and be observed for the development of tracheobronchitis and pulmonary edema.

[Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 Firefighting measures

Extinguishing media

- There is no restriction on the type of extinguisher which may be used.

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Special hazards arising from the substrate or mixture

Fire Incompatibility	Welding electrodes should not be allowed to come into contact with strong acids or other substances which are corrosive to metals. Welding arc and metal sparks can ignite combustibles.
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear breathing apparatus plus protective gloves in the event of a fire. ▶ Prevent, by any means available, spillage from entering drains or water courses. ▶ Use fire fighting procedures suitable for surrounding area.
Fire/Explosion Hazard	<ul style="list-style-type: none"> ▶ Non combustible. ▶ Not considered to be a significant fire risk, however containers may burn. ▶ In a fire may decompose on heating and produce toxic / corrosive fumes.
HAZCHEM	Not Applicable

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	Clean up all spills immediately. Avoid contact with skin and eyes. Wear impervious gloves and safety glasses. Use dry clean up procedures and avoid generating dust. Place spilled material in clean, dry, sealable, labelled container.
Major Spills	Minor hazard. <ul style="list-style-type: none"> ▶ Clear area of personnel. ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Control personal contact with the substance, by using protective equipment if risk of overexposure exists.

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

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> ▶ Limit all unnecessary personal contact. ▶ Wear protective clothing when risk of exposure occurs. ▶ Use in a well-ventilated area. ▶ Avoid contact with incompatible materials.
Other information	<ul style="list-style-type: none"> ▶ Store in original containers. ▶ Keep containers securely sealed. ▶ Store in a cool, dry, well-ventilated area. ▶ Store away from incompatible materials and foodstuff containers.

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> ▶ Packaging as recommended by manufacturer. ▶ Check that containers are clearly labelled Multi-wall paper container NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
Storage incompatibility	Segregate from strong acids and strong oxidisers

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	copper	Copper (fume)	0.2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	copper	Copper, dusts & mists (as Cu)	1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	tin	Tin, metal	2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	welding fumes	Welding fumes (not otherwise classified)	5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	copper fume	Copper, dusts & mists (as Cu)	1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	copper fume	Copper (fume)	0.2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	zinc oxide fume	Zinc oxide (dust)	10 mg/m3	Not Available	Not Available	(a) This value is for inhalable dust containing no asbestos and < 1% crystalline silica.
Australia Exposure Standards	zinc oxide fume	Zinc oxide (fume)	5 mg/m3	10 mg/m3	Not Available	Not Available
Australia Exposure Standards	tin fume	Tin, metal	2 mg/m3	Not Available	Not Available	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
copper	3 mg/m3	33 mg/m3	200 mg/m3
zinc	6 mg/m3	21 mg/m3	120 mg/m3
tin	6 mg/m3	67 mg/m3	400 mg/m3
boric acid	6 mg/m3	23 mg/m3	830 mg/m3
sodium metaborate	6.8 mg/m3	77 mg/m3	460 mg/m3
copper fume	3 mg/m3	33 mg/m3	200 mg/m3
zinc oxide fume	10 mg/m3	15 mg/m3	2,500 mg/m3
tin fume	6 mg/m3	67 mg/m3	400 mg/m3

Ingredient	Original IDLH	Revised IDLH
copper	100 mg/m3	Not Available
zinc	Not Available	Not Available
tin	Not Available	Not Available
boric acid	Not Available	Not Available
sodium metaborate	Not Available	Not Available
welding fumes	Not Available	Not Available
copper fume	100 mg/m3	Not Available
zinc oxide fume	500 mg/m3	Not Available
tin fume	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
boric acid	D	> 0.01 to ≤ 0.1 mg/m³
sodium metaborate	E	≤ 0.01 mg/m³


Notes:

Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.

MATERIAL DATA

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Exposure controls

Appropriate engineering controls	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p> <p>If risk of inhalation or overexposure exists, wear SAA approved respirator or work in fume hood.</p>
Personal protection	
Eye and face protection	<p>Welding helmet with suitable filter. Welding hand shield with suitable filter.</p> <ul style="list-style-type: none"> ▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. ▶ Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection. ▶ For most open welding/brazing operations, goggles, even with appropriate filters, will not afford sufficient facial protection for operators. Where possible use welding helmets or handshields corresponding to EN 175, ANSI Z49:12005, AS 1336 and AS 1338 which provide the maximum possible facial protection from flying particles and fragments.
Skin protection	See Hand protection below
Hands/feet protection	<p>Welding Gloves</p> <p>Safety footwear</p>
Body protection	See Other protection below
Other protection	<p>Overalls</p> <ul style="list-style-type: none"> ▶ Eyewash unit. <p>Aprons, sleeves, shoulder covers, leggings or spats of pliable flame resistant leather or other suitable materials may also be required in positions where these areas of the body will encounter hot metal.</p>

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the

computer-generated selection:

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Material	CPI
BUTYL	A
NEOPRENE	A
NITRILE	A
VITON	A

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type -P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	-AUS P2	-	-PAPR-AUS / Class 1 P2
up to 50 x ES	-	-AUS / Class 1 P2	-
up to 100 x ES	-	-2 P2	-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	White flux-coated wire; insoluble in water.
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Physical state	Manufactured	Relative density (Water = 1)	6.8
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Applicable
pH (as supplied)	Not Applicable	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	885	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	Not Applicable	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	Not Applicable
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (1%)	Not Applicable
Vapour density (Air = 1)	Not Applicable	VOC g/L	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	<ul style="list-style-type: none"> ▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	<p>Fumes evolved during welding operations may be irritating to the upper-respiratory tract and may be harmful if inhaled. Copper poisoning following exposure to copper dusts and fume may result in headache, cold sweat and weak pulse. Capillary, kidney, liver and brain damage are the longer term manifestations of such poisoning. Inhalation of freshly formed metal oxide particles sized below 1.5 microns and generally between 0.02 to 0.05 microns may result in "metal fume fever". Symptoms may be delayed for up to 12 hours and begin with the sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Inhalation of freshly formed zinc oxide particles sized below 1.5 microns and generally between 0.02 to 0.05 microns may result in "metal fume fever", with symptoms resembling influenza. Symptoms may be delayed for up to 12 hours and begin with the sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalised feeling of malaise. Mild to severe headache, nausea, occasional vomiting, fever or chills, exaggerated mental activity, profuse sweating, diarrhoea, excessive urination and prostration may also occur.</p> <p>Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.</p> <p>If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.</p>
Ingestion	Not normally a hazard due to physical form of product.
Skin Contact	<p>The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.</p> <p>The material may accentuate any pre-existing skin condition</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p>
Eye	Fumes from welding/brazing operations may be irritating to the eyes.

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Chronic	Principal routes of exposure include accidental contact with the molten metal and inhalation of fume arising as a consequence of the action of the flame on the rod / wire. Although fume generation rates are generally low, excessive heating of the material, well above its quoted melting point, may result in over-exposure.	
CIGWELD Comweld Comcoat T	TOXICITY Not Available	IRRITATION Not Available
copper	TOXICITY dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation(Rat) LC50: 0.733 mg/l4h ^[1] Oral (Mouse) LD50; 0.7 mg/kg ^[2]	IRRITATION Eye: no adverse effect observed (not irritating) ^[1] Skin: no adverse effect observed (not irritating) ^[1]
zinc	TOXICITY Dermal (rabbit) LD50: 1130 mg/kg ^[2] Oral (Rat) LD50: >2000 mg/kg ^[1]	IRRITATION Eye: no adverse effect observed (not irritating) ^[1] Skin: no adverse effect observed (not irritating) ^[1]
tin	TOXICITY dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation(Rat) LC50: >4.75 mg/l4h ^[1] Oral (Rat) LD50: >2000 mg/kg ^[1]	IRRITATION Eye: no adverse effect observed (not irritating) ^[1] Skin: no adverse effect observed (not irritating) ^[1]
boric acid	TOXICITY Dermal (rabbit) LD50: >2000 mg/kg ^[1] Inhalation(Rat) LC50: >2.12 mg/l4h ^[1] Oral (Rat) LD50: >2600 mg/kg ^[1]	IRRITATION Eye: no adverse effect observed (not irritating) ^[1] Skin (human): 15 mg/3d -I- mild Skin: no adverse effect observed (not irritating) ^[1]
sodium metaborate	TOXICITY dermal (guinea pig) LD50: >2000 mg/kg ^[2] Inhalation(Rat) LC50: >2.03 mg/l4h ^[1] Oral (Rat) LD50: >250 mg/kg ^[1]	IRRITATION Not Available
welding fumes	TOXICITY Not Available	IRRITATION Not Available
copper fume	TOXICITY dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation(Rat) LC50: 0.733 mg/l4h ^[1] Oral (Mouse) LD50; 0.7 mg/kg ^[2]	IRRITATION Eye: no adverse effect observed (not irritating) ^[1] Skin: no adverse effect observed (not irritating) ^[1]
zinc oxide fume	TOXICITY dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation(Rat) LC50: >1.79 mg/l4h ^[1] Oral (Rat) LD50: >5000 mg/kg ^[1]	IRRITATION Eye (rabbit): 500 mg/24h mild Eye: no adverse effect observed (not irritating) ^[1] Skin (rabbit): 500 mg/24h mild Skin: no adverse effect observed (not irritating) ^[1]
tin fume	TOXICITY dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation(Rat) LC50: >4.75 mg/l4h ^[1] Oral (Rat) LD50: >2000 mg/kg ^[1]	IRRITATION Eye: no adverse effect observed (not irritating) ^[1] Skin: no adverse effect observed (not irritating) ^[1]
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	
COPPER	WARNING: Inhalation of high concentrations of copper fume may cause "metal fume fever", an acute industrial disease of short duration. Symptoms are tiredness, influenza like respiratory tract irritation with fever.	

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	<p>The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.</p> <p>for copper and its compounds (typically copper chloride):</p> <p>Acute toxicity: There are no reliable acute oral toxicity results available. In an acute dermal toxicity study (OECD TG 402), one group of 5 male rats and 5 groups of 5 female rats received doses of 1000, 1500 and 2000 mg/kg bw via dermal application for 24 hours. The LD50 values of copper monochloride were 2,000 mg/kg bw or greater for male (no deaths observed) and 1,224 mg/kg bw for female. Four females died at both 1500 and 2000 mg/kg bw, and one at 1,000 mg/kg bw.</p>
SODIUM METABORATE	<p>anhydrous: for octahydrate</p> <p>Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.</p>
WELDING FUMES	<p>Most welding is performed using electric arc processes - manual metal arc, metal inert gas (MIG) and tungsten inert gas welding (TIG) – and most welding is on mild steel.</p> <p>In 2017, an IARC working group has determined that "sufficient evidence exists that welding fume is a human lung carcinogen (Group 1).</p> <p>A complicating factor in classifying welding fumes is its complexity. Generally, welding fume is a mixture of metal fumes (i.e., iron, manganese, chromium, nickel, silicon, titanium) and gases (i.e., carbon monoxide, ozone, argon, carbon dioxide). Welding fume can contain varying concentrations of individual components that are classified as human carcinogens, including hexavalent chrome and nickel. However the presence of such metals and the intensity of exposure to each differ significantly according to a number of variables, including the type of welding technique used and the composition of the base metal and consumable.</p> <p>WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS. Not available. Refer to individual constituents.</p>
ZINC OXIDE FUME	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
ZINC & TIN & TIN FUME	No significant acute toxicological data identified in literature search.
ZINC & BORIC ACID & ZINC OXIDE FUME	The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

Acute Toxicity	✓	Carcinogenicity	✓
Skin Irritation/Corrosion	✗	Reproductivity	✗
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	✗
Respiratory or Skin sensitisation	✗	STOT - Repeated Exposure	✗
Mutagenicity	✗	Aspiration Hazard	✗

Legend: ✗ – Data either not available or does not fill the criteria for classification
✓ – Data available to make classification

SECTION 12 Ecological information

Toxicity

CIGWELD Comweld Comcoat T	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
copper	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	48h	Fish	0.00009mg/l	4
	EC50	96h	Algae or other aquatic plants	0.03-0.058mg/l	4
	EC50	72h	Algae or other aquatic plants	0.011-0.017mg/L	4
	LC50	96h	Fish	0.0028mg/l	2
zinc	EC50	48h	Crustacea	0.0006-0.0017mg/l	4
	Endpoint	Test Duration (hr)	Species	Value	Source
	EC10(ECx)	168h	Algae or other aquatic plants	0.0025mg/l	2

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	EC50	96h	Algae or other aquatic plants	0.042mg/l	2
	EC50	72h	Algae or other aquatic plants	0.005mg/l	4
	LC50	96h	Fish	0.01068-0.01413mg/l	4
	EC50	48h	Crustacea	0.06-0.08mg/l	4
tin	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	168h	Crustacea	<0.005mg/l	2
	EC50	72h	Algae or other aquatic plants	>0.0192mg/l	2
	LC50	96h	Fish	>0.0124mg/l	2
boric acid	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	70-80mg/l	4
	BCF	672h	Fish	<3.2	7
	EC50	72h	Algae or other aquatic plants	40.2mg/l	2
	EC50	48h	Crustacea	230mg/L	5
	NOEC(ECx)	576h	Fish	0.001mg/L	5
	EC50	96h	Algae or other aquatic plants	15.4mg/l	2
sodium metaborate	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	768h	Fish	0.1mg/l	2
	EC50	96h	Algae or other aquatic plants	15.4mg/l	2
	EC50	72h	Algae or other aquatic plants	40mg/l	2
	LC50	96h	Fish	66.4-83mg/l	4
welding fumes	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
copper fume	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	48h	Fish	0.00009mg/l	4
	EC50	96h	Algae or other aquatic plants	0.03-0.058mg/l	4
	EC50	72h	Algae or other aquatic plants	0.011-0.017mg/L	4
	LC50	96h	Fish	0.0028mg/l	2
	EC50	48h	Crustacea	0.0006-0.0017mg/l	4
zinc oxide fume	Endpoint	Test Duration (hr)	Species	Value	Source
	BCF	1344h	Fish	19-110	7
	LC50	96h	Fish	0.112mg/l	2
	EC50	72h	Algae or other aquatic plants	0.036-0.049mg/l	4
	EC50	48h	Crustacea	0.105mg/l	2
	EC10(ECx)	168h	Algae or other aquatic plants	0.0025mg/l	2
	EC50	96h	Algae or other aquatic plants	0.3mg/l	2
tin fume	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	168h	Crustacea	<0.005mg/l	2
	EC50	72h	Algae or other aquatic plants	>0.0192mg/l	2
	LC50	96h	Fish	>0.0124mg/l	2
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
boric acid	LOW	LOW

Continued...

Bioaccumulative potential

Ingredient	Bioaccumulation
boric acid	LOW (BCF = 0)
zinc oxide fume	LOW (BCF = 217)


Mobility in soil

Ingredient	Mobility
boric acid	LOW (KOC = 35.04)

SECTION 13 Disposal considerations**Waste treatment methods**

Product / Packaging disposal	<ul style="list-style-type: none"> ▶ Recycle wherever possible or consult manufacturer for recycling options. ▶ Consult State Land Waste Management Authority for disposal. ▶ Bury residue in an authorised landfill. ▶ Recycle containers if possible, or dispose of in an authorised landfill.
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SECTION 14 Transport information**Labels Required**

Marine Pollutant	
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS**Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS****Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
copper	Not Available
zinc	Not Available
tin	Not Available
boric acid	Not Available
sodium metaborate	Not Available
welding fumes	Not Available
copper fume	Not Available
zinc oxide fume	Not Available
tin fume	Not Available

Transport in bulk in accordance with the ICG Code

Product name	Ship Type
copper	Not Available
zinc	Not Available
tin	Not Available
boric acid	Not Available
sodium metaborate	Not Available

Continued...

Product name	Ship Type
welding fumes	Not Available
copper fume	Not Available
zinc oxide fume	Not Available
tin fume	Not Available

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

copper is found on the following regulatory lists <div>Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5</div>	<div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6</div> <div>Australian Inventory of Industrial Chemicals (AIIC)</div> <div>International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)</div>
zinc is found on the following regulatory lists <div>Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals</div> <div>Australian Inventory of Industrial Chemicals (AIIC)</div>	<div>International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)</div>
tin is found on the following regulatory lists <div>Australian Inventory of Industrial Chemicals (AIIC)</div>	<div>International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)</div>
boric acid is found on the following regulatory lists <div>Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5</div>	<div>Australian Inventory of Industrial Chemicals (AIIC)</div> <div>Chemical Footprint Project - Chemicals of High Concern List</div>
sodium metaborate is found on the following regulatory lists <div>Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4</div>	<div>Australian Inventory of Industrial Chemicals (AIIC)</div>
welding fumes is found on the following regulatory lists <div>International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs</div>	<div>International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans</div>
copper fume is found on the following regulatory lists <div>Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5</div>	<div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6</div> <div>Australian Inventory of Industrial Chemicals (AIIC)</div> <div>International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)</div>
zinc oxide fume is found on the following regulatory lists <div>Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals</div> <div>Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4</div>	<div>Australian Inventory of Industrial Chemicals (AIIC)</div> <div>International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)</div>
tin fume is found on the following regulatory lists <div>Australian Inventory of Industrial Chemicals (AIIC)</div>	<div>International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)</div>

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National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (copper; zinc; tin; boric acid; sodium metaborate; copper fume; zinc oxide fume; tin fume)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (copper; zinc; tin; copper fume; tin fume)
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (sodium metaborate)
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	<p>Yes = All CAS declared ingredients are on the inventory</p> <p>No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.</p>

SECTION 16 Other information

Revision Date	23/12/2022
Initial Date	01/09/2006

SDS Version Summary

Version	Date of Update	Sections Updated
4.1	01/11/2019	One-off system update. NOTE: This may or may not change the GHS classification
5.1	23/12/2022	Classification review due to GHS Revision change.

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
 PC—STEL: Permissible Concentration-Short Term Exposure Limit
 IARC: International Agency for Research on Cancer
 ACGIH: American Conference of Governmental Industrial Hygienists
 STEL: Short Term Exposure Limit
 TEEL: Temporary Emergency Exposure Limit,
 IDLH: Immediately Dangerous to Life or Health Concentrations
 ES: Exposure Standard
 OSF: Odour Safety Factor
 NOAEL :No Observed Adverse Effect Level
 LOAEL: Lowest Observed Adverse Effect Level
 TLV: Threshold Limit Value
 LOD: Limit Of Detection
 OTV: Odour Threshold Value
 BCF: BioConcentration Factors
 BEI: Biological Exposure Index
 AIIC: Australian Inventory of Industrial Chemicals
 DSL: Domestic Substances List

Continued...

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NDSL: Non-Domestic Substances List

IECSC: Inventory of Existing Chemical Substance in China

EINECS: European INventory of Existing Commercial chemical Substances

ELINCS: European List of Notified Chemical Substances

NLP: No-Longer Polymers

ENCS: Existing and New Chemical Substances Inventory

KECI: Korea Existing Chemicals Inventory

NZIoC: New Zealand Inventory of Chemicals

PICCS: Philippine Inventory of Chemicals and Chemical Substances

TSCA: Toxic Substances Control Act

TCSI: Taiwan Chemical Substance Inventory

INSQ: Inventario Nacional de Sustancias Químicas

NCI: National Chemical Inventory

FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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