

# CIGWELD SATINARC 4, SATINARC 15

Chemwatch Material Safety Data Sheet  
Issue Date: 28-Dec-2006  
NC317ECP

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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### PRODUCT NAME

CIGWELD SATINARC 4, SATINARC 15

### SYNONYMS

"Product Code: 720412, 720415 Submerged Arc Flux"

### PRODUCT USE

Satinarc 4 is a semi- basic agglomerated flux suitable for a wide range of fillet and butt welding applications. Satinarc 15 is a general purpose agglomerated flux suitable for a multitude of fillet and butt welding applications on plate up to 25mm thick

### SUPPLIER

Company: CIGWELD Pty Ltd  
Address:  
71 Gower Street  
Preston  
VIC 3072  
AUS  
Telephone: (03) 9474 7400  
Telephone: 1300 654 674  
Emergency Tel: (03) 9474 7400

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## Section 2 - HAZARDS IDENTIFICATION

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### STATEMENT OF HAZARDOUS NATURE

**HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.** According to the Criteria of NOHSC, and the ADG Code.

### POISONS SCHEDULE

None

### RISK

Irritating to eyes and skin.  
Limited evidence of a carcinogenic effect.

### SAFETY

Do not breathe dust.  
Avoid contact with eyes.  
Wear suitable protective clothing.  
Use only in well ventilated areas.  
Keep container in a well ventilated place.  
To clean the floor and all objects contaminated by this material, use water and detergent.  
Keep away from food, drink and animal feeding stuffs.  
Take off immediately all contaminated clothing.  
In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.  
If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
flux powder containing		
magnesium oxide	1309-48-4.	<30
aluminium oxide	1344-28-1.	<30
silica fused	60676-86-0	<25
calcium fluoride	7789-75-5	<25
sodium metasilicate, anhydrous	6834-92-0	<10
manganous oxide	1344-43-0	0-10
In use, generates welding fumes including fluoride fume	Not avail.  16984-48-8	
manganese fume	7439-96-5	
magnesium oxide fume	1309-48-4	
silica welding fumes	69012-64-2	
aluminium fumes	7429-90-5	

NOTE: The arc is submerged under a bed of flux granules. Virtually all fume condenses within the bed and atmospheric fume is negligible.

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

### 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.
- 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

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.

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Section 4 - FIRST AID MEASURES

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

## INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis 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

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.

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].

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

### FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- 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.
- Equipment should be thoroughly decontaminated after use.

### FIRE/EXPLOSION HAZARD

- Non combustible.

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Section 5 - FIRE FIGHTING MEASURES

- Not considered to be a significant fire risk, however containers may burn.
- In a fire may decompose on heating and produce toxic / corrosive fumes.

## FIRE INCOMPATIBILITY

None known.

**HAZCHEM: None**

## Personal Protective Equipment

- Gloves, boots (chemical resistant).
- Breathing apparatus.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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## EMERGENCY PROCEDURES

### 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.
- Sweep up or
- Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).
- Place spilled material in clean, dry, sealable, labelled container.

### MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Recover product wherever possible. Avoid generating dust.
- Sweep / shovel up.
- If required, wet with water to prevent dusting.
- Put residues in labelled plastic bags or other containers for disposal.
- Wash area down with large quantity of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

## 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:

manganous oxide 150 mg/m<sup>3</sup>

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

manganous oxide 6 mg/m<sup>3</sup>

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

manganous oxide 0.75 mg/m<sup>3</sup>

The threshold concentration below which most people will experience no appreciable risk of health effects:

manganous oxide 0.25 mg/m<sup>3</sup>

American Industrial Hygiene Association (AIHA)

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## Section 6 - ACCIDENTAL RELEASE MEASURES

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

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

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

### SUITABLE CONTAINER

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.

### STORAGE REQUIREMENTS

- Keep dry.
- Store under cover.
- Protect containers against physical damage.
- Observe manufacturer's storing and handling recommendations.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC
Australia Exposure Standards	magnesium oxide (Magnesium oxide (fume))		10					
Australia Exposure Standards	aluminium oxide (Aluminium oxide (a))		10					

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC
Australia Exposure Standards	calcium fluoride (Fluorides (as F))		2.5					
Australia Exposure Standards	manganous oxide (Manganese, fume (as Mn))		1		3			
Australia Exposure Standards	manganous oxide (Manganese, dust & compounds (as Mn))		1					
Australia Exposure Standards	fluoride fume (Fluorides (as F))		2.5					
Australia Exposure Standards	manganese fume (Manganese, fume (as Mn))		1		3			
Australia Exposure Standards	manganese fume (Manganese, dust & compounds (as Mn))		1					
Australia Exposure Standards	magnesium oxide fume (Magnesium oxide (fume))		10					
Australia Exposure Standards	aluminium fumes (Aluminium, pyro powders (as Al))		5					
Australia Exposure Standards	aluminium fumes (Aluminium (welding fumes) (as Al))		5					
Australia Exposure Standards	aluminium fumes (Aluminium (metal dust))		10					

The following materials had no OELs on our record under the following CAS or Chemwatch (CW) numbers

- CIGWELD Satinarc 4, Satinarc 15 CW:46967
- silica fused: No data available for CAS:60676-86-0 CW:8754
- calcium fluoride: No data available for CAS:7789-75-5 CAS:14542-23-5
- sodium metasilicate, anhydrous: No data available for CAS:6834-92-0
- manganous oxide: No data available for CAS:1344-43-0
- welding fumes: No data available for CW:35201
- fluoride fume: No data available for CAS:16984-48-8
- manganese fume: No data available for CAS:7439-96-5
- silica welding fumes: No data available for CAS:69012-64-2 CW:27313

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
magnesium oxide	750	
manganous oxide	500	
manganese fume	500	
magnesium oxide fume	750	

### ODOUR SAFETY FACTOR (OSF)

Not available. Refer to individual constituents.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### INGREDIENT DATA

For each of the following

MAGNESIUM OXIDE:

FLUORIDE FUME:

MANGANESE FUME:

MAGNESIUM OXIDE FUME:

SILICA WELDING FUMES:

ALUMINIUM FUMES:

Not available

ALUMINIUM OXIDE:

The experimental and clinical data indicate that aluminium oxide acts as an "inert" material when inhaled and seems to have little effect on the lungs nor does it produce significant organic disease or toxic effects when exposures are kept under reasonable control.

[Documentation of the Threshold Limit Values], ACGIH, Sixth Edition

SILICA FUSED:

The concentration of respirable dust for application of this limit is to be determined from the fraction that penetrates a separator whose size collection efficiency is described by a cumulative lognormal function with a median aerodynamic diameter of 4.0  $\mu\text{m}$  (+-) 0.3  $\mu\text{m}$  and with a geometric standard deviation of 1.5  $\mu\text{m}$  (+-) 0.1  $\mu\text{m}$ , i.e..generally less than 5  $\mu\text{m}$ .

Little is known about the health effects of fused silica. Animal studies indicate the possible association between exposure and fibrosis. NIOSH considers fused amorphous silica to be an occupational carcinogen.

Since X-ray diffraction cannot be used for quantitative analysis of amorphous fused silica, a simple gravimetric analysis of all dust containing fused silica must be relied upon.

CALCIUM FLUORIDE:

Based on a study in which the threshold for minimum increase in bone density due to fluoride exposure was 3.38 mg/m<sup>3</sup> (as fluoride), the present TLV-TWA has been adopted to prevent irritant effects and disabling bone changes. There is also support for the proposition that occupational exposure below the TLV will have no adverse effect on pregnant women or off-spring. IARC has classified fluorides in drinking water as Group 3 carcinogens; i.e. Not classifiable as to its carcinogenicity to humans. Equivocal evidence of carcinogenic activity (osteosarcoma) has been found in male rats administered sodium fluoride in drinking water. (0-175 ppm) Evidence was not found in female rats or in male or female mice.

SODIUM METASILICATE, ANHYDROUS:

CEL TWA: 2 mg/m<sup>3</sup>

[Manufacturer]

No specific exposure limits have been established for soluble silicates.

For liquids the creation of aerosols should be avoided. For powders, general dust exposure limits according to regulation will apply (typically 1- 10 mg/m<sup>3</sup>). For corrosive soluble silicates (Molar Ratio SiO<sub>2</sub>:M<sub>2</sub>O  $\leq$ 1.6), the exposure limits set for sodium hydroxide should be considered as a guideline (2 mg/m<sup>3</sup>).

MANGANOUS OXIDE:

Ceiling values were recommended for manganese and compounds in earlier publications. As manganese is a chronic toxin a TWA is considered more appropriate. Because workers exposed to fume exhibited manganism at air-borne concentrations below those that affect workers exposed to dust a lower value has been proposed to provide an extra margin of safety. This value is still above that experienced by two workers exposed to manganese fume in the course of one study.

A number of studies have shown that susceptibility to the effects of manganese at or about 1 - 5 mg/m<sup>3</sup> (TWA) can lead to clinical manifestations of manganism or more commonly to the development of indicators of sub-clinical manganism (e.g. hand tremor, exaggerated

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reflexes, short-term memory deficits, poor psychomotor performance). Controlling long-term exposure to the recommended ES TWA level or below should provide protection for those individuals susceptible to neurological effects of prolonged exposure.

### WELDING FUMES:

In addition to complying with any individual exposure standards for specific contaminants, where current manual welding processes are used, the fume concentration inside the welder's helmet should not exceed 5 mg/m<sup>3</sup>, when collected in accordance with the appropriate standard (AS 3640, for example).

ES\* TWA: 5 mg/m<sup>3</sup>

TLV\* TWA: 5 mg/m<sup>3</sup>, B2 (a substance of variable composition)

OES\* TWA: 5 mg/m<sup>3</sup>

Most welding, even with primitive ventilation, does not produce exposures inside the welding helmet above 5 mg/m<sup>3</sup>. That which does should be controlled (ACGIH). Inspirable dust concentrations in a workers breathing zone shall be collected and measured in accordance with AS 3640, for example. Metal content can be analytically determined by OSHA Method ID25 (ICP-AES) after total digestion of filters and dissolution of captured metals. Sampling of the Respirable Dust fraction requires cyclone separator devices (elutriators) and procedures to comply with AS 2985 (for example).

## PERSONAL PROTECTION

### EYE

Welding helmet with suitable filter. Welding hand shield with suitable filter.

- 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. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

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 AS 1336 and AS 1338 which provide the maximum possible facial protection from flying particles and fragments. [WRIA-WTIA Technical Note 7].

### HANDS/FEET

Welding Gloves

Safety footwear.

### OTHER

Overalls.

- Eyewash unit.

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.

### RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

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\* - Negative pressure demand \*\* - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

For submerged arc welding operations the nature of ventilation is determined by the location of the work.

- For work conducted outdoors and in open work spaces, the use of natural ventilation is generally adequate. (Open work spaces exceed 300 cubic meters per welder)
  - For indoor work, conducted in limited work spaces, use of mechanical (general exhaust or plenum) ventilation, is generally adequate.
  - For work conducted confined spaces, mechanical ventilation, using local exhaust systems, is required. (In confined spaces always check that oxygen has not been depleted by excessive rusting of steel or snowflake corrosion of aluminium)
- Local exhaust systems must be designed to provide a minimum capture velocity at the fume source, away from the worker, of 0.5 metre/sec.
- If risk of inhalation or overexposure exists, wear SAA approved respirator or work in fume hood.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Agglomerated powder of mineral and alloy particles with no odour; insoluble in water.

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

Sinks in water.

Molecular Weight: Not applicable

Melting Range (°C): 1300

Solubility in water (g/L): Immiscible

pH (1% solution): Not applicable.

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 applicable

Specific Gravity (water=1): 1.7

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): Not available.

Viscosity: Not Applicable

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

Ingestion may result in nausea, abdominal irritation, pain and vomiting.

##### EYE

The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Fumes from welding/brazing operations may be irritating to the eyes.

##### SKIN

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

Generated dust may be discomforting.

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.

Fumes evolved during welding operations may be irritating to the upper-respiratory tract and may be harmful if inhaled.

Fluoride vapours and thermally produced particulates (fume) of the calcium, sodium and potassium salts are potent mucous membrane irritants.

Manganese fume is toxic and produces nervous system effects characterised by tiredness.

Acute poisoning is rare although acute inflammation of the lungs may occur. A chemical pneumonia may also result from frequent exposure. 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. 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.

Tolerance to the fumes develops rapidly, but is quickly lost. All symptoms usually subside within 24-36 hours following removal from exposure.

##### CHRONIC HEALTH EFFECTS

Principal route of exposure is inhalation of welding fumes from electrodes and workpiece. Reaction products arising from electrode core and flux appear as welding fume depending on welding conditions, relative volatilities of metal oxides and any coatings on the workpiece. Studies of lung cancer among welders indicate that they may experience a 30-40% increased risk compared to the general population. Since smoking and exposure to other cancer-causing agents, such as asbestos fibre, may influence these results, it is not clear whether welding, in fact, represents a significant lung cancer risk. Whilst mild steel welding represents little risk, the stainless steel welder, exposed to chromium and nickel fume, may be at risk and it is this factor which may account for the overall increase in lung cancer incidence among welders. Cold isolated electrodes are relatively harmless.

Welding fume with high levels of ferrous materials may lead to particle deposition in the lungs (siderosis) after long exposure. This clears up when exposure stops. Chronic exposure to iron dusts may lead to eye disorders.

severe disorders of the nervous system, has been reported in welders working on Mn steels in confined spaces.

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## Section 11 - TOXICOLOGICAL INFORMATION

Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discolouration, nausea and vomiting, loss of appetite, diarrhoea or constipation, weight loss, anaemia, weakness and general unwellness. There may also be frequent urination and thirst. Redness, itchiness and allergy-like inflammation of the skin and mouth cavity can occur. The central nervous system may be involved.

Other welding process exposures can arise from radiant energy UV flash burns, thermal burns or electric shock

The welding arc emits ultraviolet radiation at wavelengths that have the potential to produce skin tumours in animals and in over-exposed individuals, however, no confirmatory studies of this effect in welders have been reported.

### TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

#### MAGNESIUM OXIDE:

##### TOXICITY

Inhalation (human) TCl<sub>o</sub>: 400 mg/m<sup>3</sup>

##### IRRITATION

Nil Reported

#### ALUMINIUM OXIDE:

No significant acute toxicological data identified in literature search.

#### SILICA FUSED:

##### TOXICITY

Inhalation (rat) TCl<sub>o</sub>: 197 mg/m<sup>3</sup>/6H/26W- I

##### IRRITATION

#### CALCIUM FLUORIDE:

##### TOXICITY

Oral (rat) LD<sub>50</sub>: 4250 mg/kg

##### IRRITATION

Nil Reported

#### SODIUM METASILICATE, ANHYDROUS:

##### TOXICITY

Oral (rat) LD<sub>50</sub>: 1153 mg/kg

Skin (rabbit): 250 mg/24h SEVERE

##### IRRITATION

Skin (human): 250 mg/24h SEVERE

The material may cause severe 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. Repeated exposures may produce severe ulceration.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

#### MANGANOUS OXIDE:

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## Section 11 - TOXICOLOGICAL INFORMATION

No data of toxicological significance identified in literature search.

### WELDING FUMES:

Not available. Refer to individual constituents.

WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

### FLUORIDE FUME:

#### TOXICITY

Oral (human) LDLo: 50 mg/kg

Oral (human) TDL0: 3 mg/kg

#### IRRITATION

Nil Reported

### MANGANESE FUME:

#### TOXICITY

Inhalation (man) TCl0: 2.3 mg/m<sup>3</sup>

Oral (rat) LD50: 9000 mg/kg

The substance has been investigated as a tumorigen;

found to be an equivocal tumorigenic agent by RTECS.

#### IRRITATION

Skin (rabbit) 500mg/24H Mild

Eye (rabbit) 500mg/24H Mild

### MAGNESIUM OXIDE FUME:

#### TOXICITY

Inhalation (human) TCl0: 400 mg/m<sup>3</sup>

Substance has been investigated as a tumorigen;

found to be an equivocal tumorigenic agent by RTECS criteria in rodents.

#### IRRITATION

Nil Reported

### SILICA WELDING FUMES:

#### TOXICITY

Oral (rat) LD50: 3160 mg/kg

[RTECS]

Reports indicate high/prolonged exposures to amorphous silicas induced lung fibrosis in experimental animals; in some experiments these effects were reversible. [PATTYS]

#### IRRITATION

No data

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

### ALUMINIUM FUMES:

No toxicity or irritation data available.

MATERIAL	CARCINOGEN	REPROTOXIN	SENSITISER	SKIN
aluminium oxide	IARC:			
manganese fume		ILOM ILOEI		

### CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: aluminium oxide

Category:

### REPROTOXIN

ILOM: ILO Agents toxic to the male reproductive system: manganese fume

### REPROTOXIN

ILOEI: ILO Chemicals in the electronics industry that have toxic effects on reproduction: manganese fume

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## Section 12 - ECOLOGICAL INFORMATION

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No data for CIGWELD Satinarc 4, Satinarc 15.  
Refer to data for ingredients, which follows:

**CALCIUM FLUORIDE:**  
No data.

**SODIUM METASILICATE, ANHYDROUS:**  
Soluble silicates are wholly inorganic and once diluted have no significant environmental impact. They are saturated with respect to oxygen and as such do not possess a chemical oxygen demand (COD) or a biological oxygen demand (BOD). Depending on pH values soluble silicates in effluent and surface waters are rapidly dispersed and neutralised, by reaction with naturally occurring dissolved polyvalent metals (e.g. Ca, Mg, Al, Fe) forming insoluble silicates or amorphous silica. These products occur in abundance in natural soils and rocks. Dissolved silica resulting from commercial soluble silicates is also indistinguishable from naturally dissolved silica. The soluble silica input to the natural silica cycle from commercial use is furthermore inconsequential in view of the relative size and flux of the natural system. Concentrations of silica in natural waters commonly range from 1 to around 30 mg/l. Higher concentrations (up to 360 mg/l), however, have been found in some groundwaters where these high levels are related to rock type and water temperatures.

A study of the fate and possible effects of soluble silicates (waterglass) emissions to surface water has been performed by TNO (Apeldoorn NL, 2002). From the results of this study, no significant adverse effects to aquatic systems are to be assumed. Depending on pH values, reaction with naturally occurring dissolved polyvalent metals (e.g. Ca, Mg, Fe, Al) will result in insoluble silicate or amorphous silica being formed. These products occur in abundance in natural soils and rocks.

Dissolved silica resulting from commercial soluble silicates is also indistinguishable from naturally dissolved silica.

Soluble silicates are totally insoluble in n-octanol (and most other organic solvents). The oil/water partition coefficient of these substances is therefore not applicable.

Soluble silicates have no potential for bioaccumulation.

Untreated soluble silicate solutions are generally alkaline (pH values > 9) and therefore neutralisation should be carried out before discharging to water/ effluent systems. Once neutralised, no adverse effects on aquatic biosystems are known.

Prevent, by any means available, spillage from entering drains or water courses.

DO NOT discharge into sewer or waterways.

**SILICA WELDING FUMES:**  
No data

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## Section 13 - DISPOSAL CONSIDERATIONS

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- 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 - TRANSPORTATION INFORMATION

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HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA,

continued...

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IMDG

## Section 15 - REGULATORY INFORMATION

**POISONS SCHEDULE: None**

### REGULATIONS

magnesium oxide (CAS: 1309-48-4) is found on the following regulatory lists;  
Australia - Australia New Zealand Food Standards Code - Food Additives - Schedule 1 Permitted uses of food additives by food type  
Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted decolourants, clarifying, filtration and adsorbent agents  
Australia Exposure Standards  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
Australia National Pollutant Inventory  
CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals

aluminium oxide (CAS: 1344-28-1) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
International Agency for Research on Cancer (IARC) Carcinogens  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals

silica fused (CAS: 60676-86-0) is found on the following regulatory lists;  
Australia Exposure Standards  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals

calcium fluoride (CAS: 7789-75-5) is found on the following regulatory lists;  
Australia Dangerous Goods Code Draft 7th Edition - List of Common Pesticides with Corresponding UN Numbers  
Australia Exposure Standards  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
Australia National Pollutant Inventory  
Australia Poisons Schedule  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 2  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
OECD Representative List of High Production Volume (HPV) Chemicals

calcium fluoride (CAS: 14542-23-5) is found on the following regulatory lists;  
Australia Dangerous Goods Code Draft 7th Edition - List of Common Pesticides with Corresponding UN Numbers  
Australia Exposure Standards  
Australia Inventory of Chemical Substances (AICS)  
Australia National Pollutant Inventory  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 2  
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule

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OECD Representative List of High Production Volume (HPV) Chemicals

sodium metasilicate, anhydrous (CAS: 6834-92-0) is found on the following regulatory lists;

- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)
- Australia Poisons Schedule
- International Council of Chemical Associations (ICCA) - High Production Volume List
- OECD Representative List of High Production Volume (HPV) Chemicals

manganous oxide (CAS: 1344-43-0) is found on the following regulatory lists;

- Australia Exposure Standards
- Australia Inventory of Chemical Substances (AICS)
- OECD Representative List of High Production Volume (HPV) Chemicals

welding fumes (CAS No:Not avail):

No regulations applicable

fluoride fume (CAS: 16984-48-8) is found on the following regulatory lists;

- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIG - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)
- Australia Dangerous Goods Code Draft 7th Edition - List of Common Pesticides with Corresponding UN Numbers
- Australia Exposure Standards
- Australia National Pollutant Inventory
- Australia Poisons Schedule
- Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 2
- Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6

manganese fume (CAS: 7439-96-5) is found on the following regulatory lists;

- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIG - inorganic chemicals)
- Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)
- Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
- Australia Exposure Standards
- Australia Inventory of Chemical Substances (AICS)
- Australia National Pollutant Inventory
- OECD Representative List of High Production Volume (HPV) Chemicals
- WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

magnesium oxide fume (CAS: 1309-48-4) is found on the following regulatory lists;

- Australia - Australia New Zealand Food Standards Code - Food Additives - Schedule 1 Permitted uses of food additives by food type
- Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted decolourants, clarifying, filtration and adsorbent agents
- Australia Exposure Standards
- Australia High Volume Industrial Chemical List (HVICL)
- Australia Inventory of Chemical Substances (AICS)

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Australia National Pollutant Inventory  
CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals

silica welding fumes (CAS: 69012-64-2) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals

aluminium fumes (CAS: 7429-90-5) is found on the following regulatory lists;  
Australia - Australia New Zealand Food Standards Code - Food Additives - Schedule 1 Permitted uses of food additives by food type  
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIG - inorganic chemicals)  
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)  
Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)  
Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)  
Australia - Australian Capital Territory Environment Protection Regulation  
Pollutants entering waterways - Agricultural uses (Stock)  
Australia - Australian Capital Territory Environment Protection Regulation  
Pollutants entering waterways - Domestic water quality  
Australia Exposure Standards  
Australia High Volume Industrial Chemical List (HVICL)  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals  
WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

No data available for welding fumes as CAS: Not avail.

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
calcium fluoride	7789- 75- 5, 14542- 23- 5

### EXPOSURE STANDARD FOR MIXTURES

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

Composite Exposure Standard for Mixture (TWA) :2 mg/m<sup>3</sup>.

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/m <sup>3</sup>	Mixture Conc (%)
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Component	Breathing Zone (mg/m <sup>3</sup> )	Mixture Conc (%)
sodium metasilicate, anhydrous	2.0000	10.0

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Section 16 - OTHER INFORMATION

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