



WIA AUSTMIG 5356

Chemwatch Material Safety Data Sheet
Issue Date: 30-Mar-2006
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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

WIA AUSTMIG 5356

SYNONYMS

"Product number M535609M", M5356092kg, M535609S, M535610S, M535612M, M535612S, M5356122kg, M535616S, "Welding Industries", "GMAW electrode", "5000 series Al alloys", AL-5356, "aluminium welding wire", "AWS A5.10 ER5356", "aluminium alloy welding consumable", W.I.A.

PRODUCT USE

An aluminium-5% magnesium alloy gas metal arc welding wire for the welding of 5000 Series aluminium alloys, aluminium casting alloys containing 5% manganese and wrought alloys containing a lower magnesium content. Used under shielding gas, typically argon. The product offers corrosion resistance, high thermal and electrical conductivity and a high degree of workability. Recommended where colour-match is required for materials to be anodised.

SUPPLIER

Company: Welding Industries Of Australia

Address:

5 Allen Street

Melrose Park

SA, 5039

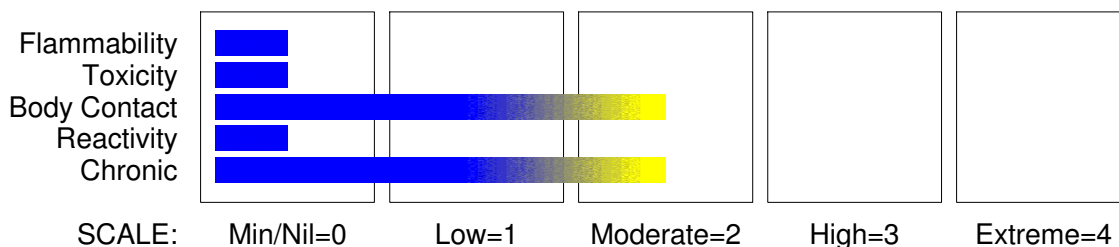
AUS

Telephone: +61 8 8276 6494

Telephone: 1300 300 884

Fax: 1300 301 884

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

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

POISONS SCHEDULE

None

continued...

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Section 2 - HAZARDS IDENTIFICATION

RISK

Cumulative effects may result following exposure*.
May produce discomfort of the respiratory system*.
* (limited evidence).

SAFETY

Avoid contact with skin.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
aluminium alloy wire which during use generates welding fumes consisting of	Not avail.	
aluminium fumes	7429-90-5	>80
magnesium oxide fume	1309-48-4	10-30
iron oxide fume	1309-37-1	<0.5
silica welding fumes	69012-64-2	<1
action of arc on air may generate ozone	10028-15-6	
nitrogen oxides	Mixture	

Section 4 - FIRST AID MEASURES

SWALLOWED

Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastro-intestinal tract.

EYE

- 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 or hair contact occurs:

- 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

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

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Section 4 - FIRST AID MEASURES

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].

- Manifestation of aluminium toxicity include hypercalcaemia, anaemia, Vitamin D refractory osteodystrophy and a progressive encephalopathy (mixed dysarthria-apraxia of speech, asterixis, tremulousness, myoclonus, dementia, focal seizures). Bone pain, pathological fractures and proximal myopathy can occur.

- Symptoms usually develop insidiously over months to years (in chronic renal failure patients) unless dietary aluminium loads are excessive.

- Serum aluminium levels above 60 ug/ml indicate increased absorption. Potential toxicity occurs above 100 ug/ml and clinical symptoms are present when levels exceed 200 ug/ml.

- Deferoxamine has been used to treat dialysis encephalopathy and osteomalacia. CaNa₂EDTA is less effective in chelating aluminium.

[Ellenhorn and Barceloux: Medical Toxicology].

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

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

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

Cool fire exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

Use fire fighting procedures suitable for surrounding area.

FIRE/EXPLOSION HAZARD

- 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.

FIRE INCOMPATIBILITY

Avoid contact with strong acids and strong alkalis.

HAZCHEM

None

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Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Wear impervious gloves.
Clean up all spills immediately.
Place in suitable containers for disposal.

MAJOR SPILLS

Minor hazard.

- Clear area of personnel.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment if risk of overexposure exists.
- Prevent, by any means available, spillage from entering drains or water courses.
- Contain spill/secure load if safe to do so.
- Bundle/collect recoverable product and label for recycling.
- Collect remaining product and place in appropriate containers for disposal.
- Clean up/sweep up area. Water may be required.
- 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:

aluminium fumes	250 mg/m ³
magnesium oxide fume	500 mg/m ³

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

aluminium fumes	50 mg/m ³
magnesium oxide fume	50 mg/m ³

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

aluminium fumes	30 mg/m ³
magnesium oxide fume	30 mg/m ³

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

aluminium fumes	15 mg/m ³
magnesium oxide fume	10 mg/m ³

American Industrial Hygiene Association (AIHA)

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

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

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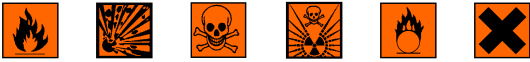
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Section 6 - ACCIDENTAL RELEASE MEASURES



+ + + + + +

+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Earth all lines and equipment.

- 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

- Check that containers are clearly labelled.
Metal can.

STORAGE INCOMPATIBILITY

Segregate from strong acids.

STORAGE REQUIREMENTS

Store in a cool, dry place.

Protect containers against physical damage.

Check regularly for spills and leaks.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL m5/m ³	Peak ppm	Peak mg/m ³
Australia Exposure Standards	aluminium fumes		5				
Australia Exposure Standards	aluminium fumes		5				
Australia Exposure Standards	aluminium fumes		10				

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL m5/m ³	Peak ppm	Peak mg/m ³
Australia Exposure Standards	magnesium oxide fume		10				
Australia Exposure Standards	iron oxide fume		5				
Australia Exposure Standards	iron oxide fume		10				
Australia Exposure Standards	ozone					0.1	0.2

The following materials had no OELs on our record under the following CAS or Chemwatch (CW) numbers
 WIA Austmig 5356: No data available for CW:50540
 welding fumes: No data available for CW:35201
 silica welding fumes: No data available for CAS:69012-64-2
 nitrogen oxides: No data available for
 Mixture: No data available for

EMERGENCY EXPOSURE LIMITS

Material	Original IDLH Value (ppm)	Original IDLH Value (mg/m ³)	Revised IDLH Value (mg/m ³)	Revised IDLH Value (ppm)
magnesium oxide fume	N.E.	N.E.	750	
iron oxide fume	N.E.	N.E.	2,500	
ozone	10			5

None assigned. Refer to individual constituents.

INGREDIENT DATA

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/m³, when collected in accordance with the appropriate standard (AS 3640, for example).

ES* TWA: 5 mg/m³

TLV* TWA: 5 mg/m³, B2 (a substance of variable composition)

OES* TWA: 5 mg/m³

Most welding, even with primitive ventilation, does not produce exposures inside the welding helmet above 5 mg/m³. 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).

ALUMINIUM FUMES:

ES* TWA: 5 mg/m³ (welding fumes) (as Al) M.Wt. 26.98

TLV* TWA: 5 mg/m³ aluminum welding fumes, as Al

MAGNESIUM OXIDE FUME:

ES* TWA: 10 mg/m³

TLV* TWA: 10 mg/m³

OES* TWA: 4 mg/m³; STEL: 10 mg/m³

MAK value: 6 mg/m³

- measured as the respirable fraction of the aerosol.

MAK Category II Peak Limitation: For substances with systemic effects and with a

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

half-life in humans of less than two hours.

Allows excursions of 2 times the MAK value, for 30 minutes (on average), four times per shift.

MAK values, and categories and groups are those recommended within the Federal Republic of Germany.

IDLH Level: 750 mg/m³

IRON OXIDE FUME:

ES* TWA: 5 mg/m³ (as Fe in fumes and gases from welding and cutting)

TLV* TWA: 5 mg/m³ (as Fe) A4

NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans.

OES* TWA: 5 mg/m³; STEL: 10 mg/m³ (as Fe)

SILICA WELDING FUMES:

Not available. Refer to individual constituents.

OZONE:

NOTE: Detector tubes for ozone, measuring in excess of 0.05 ppm, are commercially available.

Exposure at 0.2 ppm appears to produce mild acute but not cumulative effects. It is thought that exposures of the order of 0.1 ppm will be tolerated by most workers including asthmatics. Chronic exposure at 0.1 ppm or more can induce significant adverse effects in the lower respiratory tract of both normal and atopic individuals.

Human exposure for 2 hours at an average concentration of 1.5 ppm ozone resulted in a 20% reduction in timed vital capacity of the lung and other effects. Concentrations of ozone in excess of a few tenths ppm cause occasional discomfort to exposed individuals manifest as headache, dryness of the throat and mucous membranes of the eyes and nose following exposures of short duration.

Exposure to ozone during moderate to heavy work loads results in significantly decreased forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) at 0.12 ppm; this effect is greater at higher concentrations.

NITROGEN OXIDES:

Data for nitrogen dioxide:

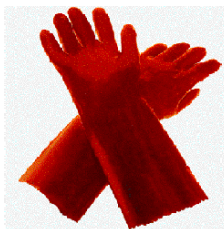
TLV TWA: 3 ppm 6 mg/m³ STEL: 5 ppm 10 mg/m³

ES TWA: 3 ppm 5.6 mg/m³ STEL: 5 ppm 9.4 mg/m³

IDLH Level: 50 ppm

NOTE: Detector tubes for nitrogen dioxide, measuring in excess of 0.5 ppm, are commercially available.

PERSONAL PROTECTION



EYE

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

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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

HANDS/FEET

Welding Gloves
Safety footwear.

RESPIRATOR

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

* - Negative pressure demand ** - Continuous flow.

OTHER

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.

ENGINEERING CONTROLS

Special ventilation requirements apply for processes which result in the generation of aluminium, copper, fluoride, manganese or zinc fume.

- For work conducted outdoors and in open work spaces, the use of mechanical (general exhaust or plenum) ventilation is required as a minimum. (Open work spaces exceed 300 cubic meters per welder)
- For indoor work, conducted in limited or confined work spaces, use of mechanical ventilation by local exhaust systems is mandatory. (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. 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: welding " brazing fumes (released at relatively low velocity into moderately still air)	Air Speed: 0.5-1.0 m/s (100-200 f/min.)
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Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	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

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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 welding or brazing fumes generated 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.

If risk of overexposure exists, wear SAA approved respirator.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Bright drawn aluminium alloy wire. Insoluble in water.

No odour. Finely divided aluminium will form explosive mixtures in air.

Hot aluminium does not change colour.

Typical wire analysis: 0.25%Si, 0.4%Fe, 0.15%Mn, 0.25%Cr, 0.1%Zn, 0.15%Ti, 5.2%Mg, balance Aluminium.

PHYSICAL PROPERTIES

Does not mix with water.

Sinks in water.

Molecular Weight: Not applicable.

Melting Range (°C): 640

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 available.

State: Manufactured

Boiling Range (°C): Not applicable

Specific Gravity (water=1): 2.7 (bulk)

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.

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Product is considered stable and hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Considered an unlikely route of entry in commercial/industrial environments.

EYE

Fumes from welding/brazing operations may be irritating to the eyes.

SKIN

Skin contact does not normally present a hazard, though it is always possible that occasionally individuals may be found who react to substances usually regarded as inert.

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Section 11 - TOXICOLOGICAL INFORMATION

INHALED

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

Aluminium fume, as aluminium oxide, is a respiratory tract irritant. 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. Harmful levels of ozone may be found when working in confined spaces. Symptoms of exposure include irritation of the upper membranes of the respiratory tract and lungs as well as pulmonary (lung) changes including irritation, accumulation of fluid (congestion and oedema) and in some cases haemorrhage. Exposure may aggravate any pre-existing lung condition such as bronchitis, asthma or emphysema.

Shielding gases may act as simple asphyxiants if significant levels are allowed to accumulate. Oxygen monitoring may be necessary.

CHRONIC HEALTH EFFECTS

Metallic dusts generated by the industrial process give rise to a number of potential health problems. The larger particles, above 5 micron, are nose and throat irritants. Smaller particles however, may cause lung deterioration. Particles of less than 1.5 micron can be trapped in the lungs and, dependent on the nature of the particle, may give rise to further serious health consequences. Ozone is suspected to produce lung cancer in laboratory animals; no reports of this effect have been documented in exposed human populations. 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.

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC)

Carcinogens: iron oxide fume Category: Group 3: Not classifiable as to carcinogenicity to humans

Section 12 - ECOLOGICAL INFORMATION

No data

Refer to data for ingredients, which follows:

SILICA WELDING FUMES:

No data

OZONE:

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)

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Section 12 - ECOLOGICAL INFORMATION

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards:

1993 Commission of the European Communities.

Section 13 - DISPOSAL CONSIDERATIONS

- 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.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM

None

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

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

None

REGULATIONS

welding fumes (CAS No:Not avail):

No regulations applicable

aluminium fumes (CAS: 7429-90-5) is found on the following regulatory lists;

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

OECD Representative List of High Production Volume (HPV) Chemicals

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

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

International Council of Chemical Associations (ICCA) - High Production Volume List

OECD Representative List of High Production Volume (HPV) Chemicals

iron oxide fume (CAS: 1309-37-1) is found on the following regulatory lists;

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 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

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Section 15 - REGULATORY INFORMATION

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

No data available for ozone as CAS: 10028-15-6.

No data available for nitrogen oxides as CAS: Mixture.

Section 16 - OTHER INFORMATION

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