Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: **FERROSILICON MAGNESIUM ALLOYS**

Other name(s): Ferro Silicon 5% Magnesium; Ferrosilicon magnesium 5%.; CompactMag Alloy; MgFeSi; Elmag; Lamet; Remag Nodularisers.

Recommended Use of the Chemical and Restrictions on Use Additive to liquid metal in foundries for production of cast iron.

Supplier: Ixom Operations Pty Ltd (Incorporated in Australia)
NZBN: 9429041465226
Street Address: 166 Totara Street
Mt Maunganui South
New Zealand

Telephone Number: +64 9 368 2700
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Emergency Telephone: **0 800 734 607 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Not classified as a Dangerous Good under NZS 5433:2012 Transport of Dangerous Goods on Land.
This product has been tested according to "United Nations Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria Part III - 33.4.1.4" and is not classified as a Class 4.3 dangerous good.

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

SIGNAL WORD: DANGER

Subclasses:
Subclass 6.1 Category E - Substances which are acutely toxic.
Subclass 6.3 Category B - Substances that are mildly irritating to the skin.
Subclass 6.5 Category A - Substances that are respiratory sensitisers.
Subclass 6.8 Category B - Substances that are suspected human reproductive or developmental toxicants.

Metal Industry Products (Subsidiary Hazard) Group Standard 2017
Approval Number: HSR002612

Hazard Statement(s):
H303 May be harmful if swallowed.
H316 Causes mild skin irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H361 Suspected of damaging fertility or the unborn child.

Precautionary Statement(s):

Prevention:
P102 Keep out of reach of children.
P103 Read label before use.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves, protective clothing.
P281 Use personal protective equipment as required.
P285 In case of inadequate ventilation wear respiratory protection.

Response:
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P304+P341 IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P308+P313 IF exposed or concerned: Get medical advice/attention.

Storage:
P405 Store locked up.

Disposal:
P501 In case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Notice 2017. This may also include any method of disposal that must be avoided.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Components	CAS Number	Proportion	Hazard Codes
Ferrosilicon	8049-17-0	>60%	-
Calcium	7440-70-2	0-5%	H261
Chromium	7440-47-3	0-0.3%	-
Non hazardous component(s)	-	to 100%	-

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

Skin Contact:
If skin contact occurs, remove contaminated clothing and wash skin with soap and water. If irritation occurs, seek medical advice.

Eye Contact:
If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion:
Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further water. Seek medical advice.

Indication of immediate medical attention and special treatment needed:
Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Dry sand. Dry agent (carbon dioxide, dry chemical powder) - water MUST NOT be allowed to come into contact with substance.

Unsuitable Extinguishing Media:
Water.

Specific hazards arising from the chemical:
Combustible solid.

Special protective equipment and precautions for fire-fighters:
MgFeSi-particles suspended in air at concentrations above 100 g/m^3 can cause dust explosions. Deposits of MgFeSi-dust can propagate flames. Crushing of MgFeSi in air may cause powerful sparks that can initiate powder fires and dust explosions. Avoid dust accumulation in crushing equipment by regularly cleaning by water between campaigns, and before hot work operations. For a given Si/Fe ratio and particle size, ignition sensitivity and the violence of explosion increase with increasing content of Mg. Dust from MgFeSi alloys with Si/Fe ratio <=1.25 where up to 30% of the dust has a particle diameter <50 micrometres, the Mg content has to exceed 10% w/w if the dust is to be explosive. Finer dust has a lower limit for the critical content of Mg with regards to danger of explosion. Addition of wet material to molten metal may cause explosions. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. Shut off all possible sources of ignition. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Wear protective equipment to prevent skin and eye contact and breathing in dust. Work up wind or increase ventilation. Cover with dry absorbent (inert material, sand or soil). Sweep or vacuum up, but avoid generating dust. Collect and seal in properly labelled containers or drums for disposal. Damp product must be kept away from dry, and must not be collected and stored in closed containers. Use non-sparking tools.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid skin and eye contact and breathing in dust. Avoid handling which leads to dust formation. May form flammable dust clouds in air. For precautions necessary refer to Safety Data Sheet "Dust Explosion Hazards". Take precautionary measures against static discharges.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated place. Protect from moisture. Store away from sources of heat or ignition. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for spills.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Workplace Exposure Standards: No value assigned for this specific material by the New Zealand Workplace Health & Safety Authority. However, Workplace Exposure Standard(s) for particulates and decomposition product(s):

Particulates not otherwise classified: 8hr WES-TWA 10 mg/m^3 (inhalable dust) or 3 mg/m^3 (respirable dust)
Arsine: WES-TWA 0.05 ppm, 0.16 mg/m^3
Phosphine: WES-TWA 0.3 ppm, 0.42 mg/m^3; WES-STEL 1 ppm, 1.4 mg/m^3

As published by the New Zealand Workplace Health & Safety Authority.

WES - TWA (Workplace Exposure Standard - Time Weighted Average) - The eight-hour, time-weighted average exposure standard is designed to protect the worker from the effects of long-term exposure.

WES - STEL (Workplace Exposure Standard - Short Term Exposure Limits) - The 15 minute average exposure standard. Applies to any 15 minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both short-term and eight-hour, time-weighted average exposures should be determined.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Appropriate engineering controls:
Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, DUST MASK.

Wear overalls, safety glasses and impervious gloves. Avoid generating and inhaling dusts. If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Granules
Colour:	Grey
Odour:	Odourless
Specific Gravity:	2.5-7.3
Relative Vapour Density (air=1):	Not available
Vapour Pressure (20 °C):	Not available
Flash Point (°C):	Not applicable
Flammability Limits (%):	Lowest explosive limit is +/- 60 mg/m^3
Autoignition Temperature (°C):	>400
Solubility in water (g/L):	Not available
Melting Point/Range (°C):	1220-1400 (101.3 kPa)
pH:	Not available

10. STABILITY AND REACTIVITY

Reactivity: Reacts with water. Reacts with acids. Reacts with bases.

Chemical stability: No information available.

Possibility of hazardous reactions: Highly flammable hydrogen gas and the highly flammable and very toxic gases phosphine and arsine (garlic-like smell), both heavier than air, may be formed if CaBaFesi gets in contact with moisture, acids or bases. A reaction with hydrofluoric acid or nitric acid leads to the formation of toxic gases such as silicon tetrafluoride or nitrous gases. Wet product will form hydrogen gas if added to molten metal, due to decomposition of water. Dust explosion hazard.

Conditions to avoid: Avoid dust generation. Avoid exposure to moisture.

Incompatible materials: Incompatible with water , moisture , acids , bases .

Hazardous decomposition products: Arsine. Phosphine. Hydrogen.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: Swallowing can result in nausea, vomiting, diarrhoea, and abdominal pain.

Eye contact: May be an eye irritant. Exposure to the dust may cause discomfort due to particulate nature. May cause physical irritation to the eyes.

Skin contact: Contact with skin may result in irritation.

Inhalation: Breathing in dust may result in respiratory irritation. A respiratory sensitiser. Can cause possible allergic reactions, producing asthma-like symptoms. The vapour or smoke generated on contact with water, acids or alkalis is highly toxic. Breathing in high concentrations may result in headache, vomiting, irritation to the respiratory tract and central nervous system effects.

Acute toxicity: No LD50 data available for the product.

Respiratory or skin sensitisation: A respiratory sensitiser.

Chronic effects:

Mutagenicity:	No information available.
Carcinogenicity:	Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).
Reproductive toxicity:	Suspected of damaging fertility or the unborn child.
Specific Target Organ Toxicity (STOT) - single exposure:	No information available.
Specific Target Organ Toxicity (STOT) - repeated exposure:	No information available.
Aspiration hazard:	No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Avoid contaminating waterways.
Persistence/degradability:	Biodegradation is not an applicable endpoint since the product is an inorganic chemical.
Bioaccumulative potential:	Not expected to bioaccumulate.
Mobility in soil:	Mobility is expected to be low.

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Refer to local government authority for disposal recommendations. Dispose of contents/container in accordance with local/regional/national/international regulations.

14. TRANSPORT INFORMATION

Road and Rail Transport
Not classified as a Dangerous Good under NZS 5433:2012 Transport of Dangerous Goods on Land.
This product has been tested according to "United Nations Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria Part III - 33.4.1.4" and is not classified as a Class 4.3 dangerous good.

Marine Transport
Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

Air Transport
Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION

Classification:
Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017 and the Hazardous Substances (Classification) Notice 2017.

Subclasses:
Subclass 6.1 Category E - Substances which are acutely toxic.
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Hazard Statement(s):
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H361 Suspected of damaging fertility or the unborn child.

16. OTHER INFORMATION

Supplier Safety Data Sheet; 10/ 2017.
Elmag®, Lamet®, Remag® and CompactMag® are registered trademarks of Elkem AS.

This safety data sheet has been prepared by Ixom Operations Pty Ltd (Toxicology & SDS Services).

Reason(s) for Issue:
5 Yearly Revised Primary SDS
Addition/Change of synonymous name(s)

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.