



New Zealand Steel Ltd

SAFETY DATA SHEET Melter Slag

Section 1 – Product and Company Information

Company Name: New Zealand Steel
Address: Private Bag 92121 Auckland. New Zealand
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Synonyms	Iron Making Slag; Melter Chip
Product Use	Suitable for use as a drainage / roading aggregate; wetlands.
Description	Non-metallic co-product from steel making
Family group	Inorganic silica, alumina, titania with calcium and magnesium oxides.
Appearance	Aggregate or granular. Grey in colour.

Section 2 – Hazard Identification

Classified as non-hazardous according to the criteria in the Hazardous Substance (Classification) Notice 2017

Section 3 - Composition/Information on Ingredients

Components are listed as oxides for quantitative purposes. Actual oxides do not generally occur in “free form” but rather as complexed silica-based glasses or crystals.

Components	CAS NO	Approximate %
Titanium reported as titanium dioxide	13463-67-7	34 – 36
Aluminium reported as aluminium oxide	1333-84-2	18 – 19
Calcium reported as calcium oxide	1305-78-8	14 – 17
Magnesium reported as magnesium oxide	1309-48-4	12.8 – 13.5
Silica reported as silica dioxide (fused)	60676-86-0	12 – 15
Iron oxide	1309-37-1	3 – 6
Manganese reported as manganese oxide	1344-43-0	1 – 2
Sodium oxide	1313-59-3	0.3 – 0.4
Vanadium reported as vanadium trioxide	1314-34-7	0.2 – 0.3

Sulphur	7704-34-9	0.1 – 0.2
Potassium oxide	12136-45-7	0.09 – 0.14

Section 4 – First Aid Measures

IF EXPOSED OR IF YOU FEEL UNWELL: Call a POISON CENTRE or doctor/physician

Inhalation	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Skin Contact	IF ON SKIN (or hair): Clean or remove all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before re-use.
Eye	IF IN EYES: Irrigate eye carefully and seek medical attention if irritation continues. Remove contact lenses, if present and easy to do. Seek appropriate medical assistance for abrasions or embedded particles.
Ingestion	IF SWALLOWED: Rinse mouth, do NOT induce vomiting.
Medical conditions aggravated by exposure	Individuals with lung disease exposed to fine dust (e.g. bronchitis, emphysema, pulmonary disease). Nasal irritation.

Section 5 – Fire Fighting Measures

Steel slag in the solid state is not considered to be a fire or an explosion hazard.

Flash Point	Non-combustible	Flammable Limits	Non-combustible
Extinguishing media	Use extinguishing media appropriate for surrounding fire	Fire incompatibility	See Section 10 for stability and reactivity of substance
Fire fighting	<ul style="list-style-type: none"> Alert Fire Brigade and advise location and nature of hazard. Product is not combustible. No special fire fighting procedures required. Use fire fighting procedures suitable for surrounding area. See Section 10 for hazardous decomposition products from fire. 		

Section 6– Accidental Release Measures

Clean up procedure	Wear appropriate protective clothing as described in Section 8 and avoid inhalation of slag and contact with skin. Sweep spilled material into a container minimizing dust generation. Do not wash slag down sewage and drainage systems or into natural water bodies. Refer Section 13 for disposal considerations.
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Section 7 – Handling and Storage

Handling	<p>Read label before use. Read safety datasheet before use. Wear appropriate PPE. Do not eat, drink or smoke when using this product. Do not inhale fine dusts. Always wash hands thoroughly with soap and water after handling. Avoid release to the natural waterways.</p>
Storage	<p>Keep out of reach of children. Store away from waterways to avoid spillage or runoff going to drain or natural waterways. Delivery may be in bulk. Bulk bags: Reinforced bags required for dense materials.</p>

Section 8 – Exposure Controls and Personal Protection

Exposure controls

Hazardous Components	CAS NO	WES-TWA mg/m ³
Inhalable dust	-	10
Respirable dust	-	3

WES-TWA = New Zealand Workplace Exposure Standard – Time Weighted Average (9th Edition November 2017).
NA = Not established

Recommended monitoring procedures

If this product contain ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards.

Personal protection

Respiratory Protection

Under normal conditions no respiratory protection is required. Wear an approved respirator that is properly fitted and in good conditions when exposed to dust when handling material e.g. conveyor systems, shovelling, loader transfer.



Skin Protection

Wear gloves and protective clothing to prevent skin contact.
Remove clothing and protective equipment that is saturated with wetted slagdust and wash exposed areas.



Eye Protection

Wear approved safety glasses when handling slag particularly if dusty to prevent contact with eyes. Wearing contact lenses when using slag and under dusty conditions is not recommended.



Section 9 – Physical/Chemical Properties

Appearance:	Grey	Odour:	No odour
Odour threshold:	Not applicable	Melting point:	1450 °C (approx.)
Initial boiling point and boiling range:	Not applicable	Relative density (H₂O = 1):	2.5
Bulk Density:	1800 kg/m ³	Solubility in water:	Insoluble
Vapour pressure:	Negligible	Vapour density:	Not applicable
pH:		Flash point:	Not applicable
Flammability:	Not applicable	Flammability limits:	Not applicable
Explosive limits:	Not applicable	Partition coefficient:	Not applicable
Auto-ignition temperature:	Not applicable	Decomposition temperature:	Not applicable
Kinematic viscosity:	Not applicable		

Section 10– Stability and Reactivity

Stability	Stable under normal conditions
Incompatible	Oxidisers. Reacts with strong acids to form explosive hydrogen gas and heat Do not store with acidic materials. Do not store with high nitrogen fertiliser (ammonia fumes maybe released.)
Hazardous Decomposition Products	Extreme heat from fire or processing may produce toxic or irritating airborne particulate, including metal and metallic oxide fumes.
Conditions to avoid	Contact with incompatible materials. Avoid creating fine dust particles in the presence of ignition sources.

Section 11 – Toxicological Information

General product information	<p>Metallurgical slags can be made into thermal insulation by conversion into glasslike fibres, often referred to as “slag wool”. Information about the carcinogenicity of slag wool fibres is applicable to the slag material. The IARC has determined that there is limited evidence in experimental animals for the carcinogenicity of slag wool and inadequate evidence in humans for the carcinogenicity of slag wool. Overall, the IARC has concluded that slag wool is not classifiable as to its carcinogenicity to humans (Group 3).</p> <p>Only limited data is available on the toxicological properties of the mixture. Toxicological information for individual components is set out below.</p>
Calcium oxide	<p>Calcium oxide dust irritates the eyes and upper respiratory tract primarily because of its alkalinity. Inflammation of the respiratory passages, ulceration and perforation of the nasal septum and pneumonia have been attributed to inhalation of calcium oxide dust. LD₅₀ (oral, rat) = 3059 mg/kg BW</p>
Iron oxide	<p>Excessive exposure of eyes to airborne iron dust can cause conjunctivitis, choroiditis, and retinitis. Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in development of a benign pneumoconiosis, called siderosis, which is observable via x-ray. Inhalation of excessive concentrations of iron oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. IARC Cancer Review Group 3 (not classifiable as a human carcinogen). LD₅₀ (oral, rat) = 10 g/kg BW.</p>
Silica, Fused	<p>Fused silica is an inert material which is less fibrogenic than crystalline silica. Silicosis has rarely been observed after exposure to pure fused silica. Silicon dust has little adverse affect on lungs and does not appear to produce significant disease or toxic effects when exposures are below the permissible exposure limit. Silicon may cause chronic respiratory effects. LD₅₀ (oral, rat) > 7.9 g/kg BW.</p>
Magnesium oxide	<p>Exposure studies have shown that MgO dust can cause slight irritation to the eyes and nose. Conjunctivitis and coughing have been reported; however not systematic effects were notes among exposed workers. Inhalation of MgO has also reported to produce a febrile reaction and leukocytosis, similar to metal fume fever, similar to that caused by exposure to zinc oxide. LD₅₀ (oral, rat) = 3870 mg/kg BW.</p>
Aluminium oxide	<p>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 disease or toxic effects when exposures are kept under reasonable control.</p>
Vanadium trioxide	<p>Exposure to vanadium dusts can induce coughing, rhinorrhea, ocular burning and conjunctivitis, nasal catarrh and haemorrhage, wheezing, rales, green to black tongue and rhonchi. LD₅₀ (oral, rat) = 5639 mg/kg BW.</p>
Titanium oxide	<p>Element classified as a possible human carcinogen Group 2B by IARC, however there is inadequate evidence for carcinogenicity in humans. There are no effects caused by skin exposure to titanium dioxide. It is believed not to be absorbed through intact skin. Dust may cause mechanical irritations. Ingestion may cause gastrointestinal tract irritation with nausea, vomiting and diarrhoea. It is not absorbed following ingestion. May be harmful if inhaled causing respiratory tract irritation. LD₅₀ (oral, rat) > 10,000 mg/kg BW.</p>
Manganese oxide	<p>Chronic manganese poisoning may result from prolonged inhalation of manganese dust</p>

and fumes. The central nervous system is the chief site of damage from the disease, which may result permanent disability. Symptoms include languor, sleepiness, weakness, emotional disturbances, spastic gait, recurring leg cramps, and paralysis. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Section 12 – Ecotoxicity Information

Ecotoxicity:	Based on the components of the substance, this substance is not ecotoxic to aquatic life.
Persistence and degradability:	No data available
Bioaccumulation potential:	No data available
Mobility in soil:	No data available
Other adverse effects:	No data available

Section 13 – Disposal Considerations

This material may be recycled if it has not been contaminated so as to make it unsuitable for its intended use.

- DO NOT allow wash water from cleaning or process equipment to enter storm water drains.
- In all cases disposal to sewer may be subject to local laws and regulations and should be considered.
- Disposal to a licensed landfill is dependent on the acceptance criteria of that landfill.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 – Transport Information

Labels Required:	None
HAZCHEM	None
Class	Not Applicable
UN Number	Not Applicable
UN packing group number	Not Applicable

Section 15 – Regulatory Information

ERMA Approval Code	Not Applicable
Group Standard	Not Applicable
Tolerable Exposure Limit	No data available
Environmental Exposure Limit	No data available

Section 16 – Other Information

Abbreviation	Definition
BW	Body Weight

Abbreviation	Definition
CAS No	Chemical Abstracts Service Registry Number
ERMA	Environmental Risk Management Authority
GHS	Globally Harmonized System
HSNO	Hazardous Substances and New Organisms Act (1996)
IARC	International Agency for Research on Cancer
LD ₅₀	Lethal Dose, 50%
PPE	Personal Protective Equipment
SDS	Safety data Sheet
UN	United Nations
WES-TWA	New Zealand Workplace Exposure Standard – Time Weighted Average

The information contained in this Safety Data Sheet (SDS) is believed to be correct as of the date issued.

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Prepared by.	Tonkin & Taylor Ltd.