New Zealand Steel Ltd

SAFETY DATA SHEET
KOBM Slag

Section 1 – Product and Company Information

Company Name: New Zealand Steel
Address: Private Bag 92121 Auckland. New Zealand
Telephone Number: +64 9 375 8367
Fax Number: +64 9 375 8904
Emergency contact number: +64 2165 4170

Synonyms	Basic Slag, Steelmaking Slag, Slag KOBM.
Product Use	Stabilisation of clays and aggregates, cement manufacturing additive.
Description	Non metallic by-product from steel making
Family group	Inorganic silica, iron, alumina, titania with calcium and magnesium oxides.
Appearance	Aggregate or granular. Silver grey in colour.

Section 2 – Hazard Identification

Classified as a hazardous substances under the criteria in the Hazardous Substances (Classification) Notice 2017.

HSNO Classification	6.9B, 8.2C, 8.3A, 9.1D
GHS Classification	Specific target organ toxicity, Category 2 Skin corrosion/irritation, Category 1C Serious eye damage/eye irritation, Category 1 Aquatic toxicity (acute), Category 3
GHS symbols	 
Signal word	Danger
GHS Hazard Statements	May cause damage to organs Causes severe skin burns and eye damage Causes serious eye damage

	May cause long-lasting harmful effects to aquatic life
GHS Precautionary Statements	Prevention: Read label before use. Keep out of reach of children. Avoid release to the environment. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wear appropriate protective personal equipment (see Section 8). Do not breathe dust of fumes.
	Response: If medical advice is needed, have product container or label at hand. If exposed or if you feel unwell call a POISON CENTER or doctor/physician. SWALLOWED: Rinse mouth. Do NOT induce vomiting. SKIN: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
	Storage: Store locked up.
	Disposal: Disposal should be carried out in accordance with Part 7 of the Group Standards for Construction Products (Corrosive [8.2C]).

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.

Hazardous Components	CAS NO	Approximate %
Calcium reported as calcium oxide	1305-78-8	51 - 58
Iron oxide	1309-37-1	16 - 23
Magnesium reported as magnesium oxide	1309-48-4	9 - 13
Silica reported as silica dioxide (fused)	60676-86-0	7 - 8
Vanadium reported as vanadium trioxide	1314-34-7	3 - 4
Aluminium reported as aluminium oxide	1333-84-2	1.5- 2.2

Titanium reported as titanium dioxide	13463-67-7	2
Manganese reported as manganese oxide	1344-43-0	2
Phosphorus reported as phosphorus pentoxide	1314-56-3	1
Chromium reported as chromium trioxide	1308-38-9	0.2
Sulphur	7704-34-9	0.1

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)**: Remove/Take off immediately 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	Respiratory conditions in particular pneumonia and bronchitis.

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	• 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.

Section 7 – Handling and Storage

Handling	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.
Storage	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.

Section 8 – Exposure Controls and Personal Protection

Exposure controls

Hazardous Components	CAS NO	WES-TWA 8 hrs mg/m^3
Titanium dioxide	13463-67-7	10
Aluminium dust	7429-90-5	10
Calcium oxide	1305-78-8	2
Chromium III compounds	n/a	0.5
Magnesium oxide fumes	1309-48-4	10
Respirable Crystalline Silica (all forms)	-	0.1
Iron oxide dust and fumes as Iron	1309-37-1	5
Manganese fume, dust, and compounds as Mn	7439-96-5	0.2 0.02 (respirable)
Respirable Vanadium as vanadium pentoxide.	1314-34-7	0.05

WES-TWA = New Zealand Workplace Exposure Standard and Biological Indices – Time Weighted Average for 8 hours shift (10th Edition November 2018).

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, boot covers and protective clothing to prevent skin contact. Remove clothing and protective equipment that is saturated with wet slag immediately wash exposed areas.  
Eye Protection
Wear approved safely glasses when handling dust or wet slag to prevent contact with eyes. Wearing contact lenses when using slag and under dusty conditions is not recommended. 

Section 9 – Physical/Chemical Properties

Appearance:	Silver Grey	**Odour:**	No odour
Odour threshold:	Not applicable	**Melting point:**	1500 °C (approx.)
Initial boiling point and boiling range:	Not applicable	**Relative density (H_2O = 1):**	2.5
Bulk Density:	1500 kg/m^3	**Solubility in water:**	Insoluble
Vapour pressure:	Negligible	**Vapour density:**	Not applicable
pH:	Not applicable	**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	Only limited data is available on the toxicological properties of the mixture. Toxicological information for individual components is set out below.
Calcium oxide	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.
Iron oxide	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). LD_{50} (oral, rat) = 10 g/kg BW.
Silica, Fused	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. LD_{50} (oral, rat) > 7.9 g/kg BW.
Magnesium oxide	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.
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 disease or toxic effects when exposures are kept under reasonable control.
Vanadium trioxide	Exposure to vanadium dusts can induce coughing, rhinorrhea, ocular burning and conjunctivitis, nasal catarrh and haemorrhage, wheezing, rales, green to black tongue and rhonchi. LD_{50} (oral, rat) = 5639 mg/kg BW.
Titanium oxide	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. LD_{50} (oral, rat) = 20,000 mg/kg BW.
Manganese oxide	Chronic manganese poisoning may result from prolonged inhalation of manganese dust 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 ecotoxic to aquatic life. The degree of ecotoxicity will depend on the particle size and quantity released.
Persistence and degradability:	This material may persist in the environment for long periods.
Bioaccumulation potential:	Not bioaccumulative
Mobility in soil:	Non-mobile
Other adverse effects:	Not applicable

Section 13 – Disposal Considerations

Disposal should be carried out in accordance with Part 7 of the Group Standards for Construction Products (Corrosive [8.2C]).
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.
- 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.
- Disposal to a licensed landfill is dependent on the acceptance criteria of that landfill.

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	HSR002542
Group Standard	Construction Products (Corrosive [8.2C]) Group Standard 2017
Tolerable Exposure Limit	No data available
Environmental Exposure Limit	No data available

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

Section 16 – Other Information

Abbreviation	**Definition**
BW	Body Weight
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
KOBM	Klöckner Oxygen Blowing Maximillanshuette
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

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Date.	21/02/2019
Version Number.	3
Prepared by.	Tonkin & Taylor Ltd.