



The Steel Company of Canada

Iron Desulphurization Scrap
Safety Data Sheet (SDS)

Section 1 – Identification

- 1(a) Product Identifier used on Label: Iron Desulphurization Scrap**
1(b) Other Means of Identification: Desulph Scrap, Iron Scrap, Kish Scrap, Desulphurization Iron
1(c) Recommended use of the chemical and restrictions on use: None
1(d) Name, Address, and Telephone Number:
 Stelco Inc.
 386 Wilcox Street
 Hamilton, ON L8L 8K5
 Phone number : (905) 528-2511 (8:00 am to 5:00 pm)
1(e) Emergency Phone Number: 1-888-CAN-UTEC (226-8832) or 613-996-6666

Section 2 – Hazard(s) Identification

2(a) Classification of the Chemical: Iron Desulphurization Scrap is considered a hazardous material according to the criteria specified in REACH [REGULATION (EC) No 1907/2006], CLP [REGULATION (EC) No 1272/2008], OSHA 29 CFR 1910.1200 Hazard Communication Standard and the Canadian Hazardous Products Regulations. The categories of Health Hazards as defined in “GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS)”, have been evaluated. Refer to Section 3, 8 and 11 for additional information.

2(b) Signal Word, Hazard Statement(s), Symbols and Precautionary Statement(s):

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)	Precautionary Statement(s)
	Single Target Organ Toxicity (STOT) Repeated Exposure - 1	Danger	Causes damage to lungs through prolonged or repeated exposure. Causes severe skin burns and serious eye damage. Harmful if swallowed. May cause respiratory irritation.	Do not breathe dusts or fume. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well ventilated area. Get medical advice/attention if you feel unwell. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor/physician. If in 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. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If swallowed: Rinse mouth. Do NOT induce vomiting. Call a poison control center or doctor/physician if you feel unwell. Store locked up. Dispose of contents in accordance with federal, provincial, state and local regulations.
	Skin Irritation - 1B Eye Irritation - 1			
	Acute Toxicity Oral - 4 STOT Single Exposure - 3			

2(c) Hazards Not Otherwise Classified: None Known

2(d) Unknown Acute Toxicity Statement (mixture): None Known

Section 3 – Composition/Information on Ingredients

3(a-c) Chemical Name, Common Name (Synonyms), CAS Number and Other Identifiers, and Concentration:

Chemical Name	CAS Number	EC Number	% weight
Iron and Iron Oxides	7439-89-6	231-096-4	29-66
	1345-25-1	215-721-8	
	1309-37-1	215-168-2	
Calcium Oxide	1305-78-8	215-138-9	12-28
Silica, Fused	60676-86-0	262-373-8	3.8-12
Magnesium Oxide	1309-48-4	215-171-9	3-10
Manganese	7439-96-5	231-105-1	0.9-3
Aluminum Oxide	1344-28-1	215-691-6	0.5-3
Titanium Dioxide	13463-67-7	236-675-5	0.2-1.3

EC- European Community

CAS- Chemical Abstract Service

Section 4 – First-aid Measures

4(a) Description of Necessary Measures: Get medical advice/attention if you feel unwell.

- **Inhalation:** If Inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor/physician.
- **Eye Contact: If in 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.
- **Skin Contact: If on skin (or hair):** Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
- **Ingestion:** Rinse mouth. Do NOT induce vomiting. Call a poison control center or doctor/physician if you feel unwell.

4(b) Most Important Symptoms/Effects, Acute and Delayed (Chronic):

Acute effects:

- **Inhalation:** Excessive exposure to high concentrations of dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 microns and usually between 0.02-0.05 microns from many metals can produce an acute reaction known as “metal fume fever”. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last from 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Excessive inhalation of calcium oxide dusts may cause severe irritation and burns of the respiratory tract.
- **Eye:** Particles of iron or iron compounds may become imbedded in the eye. Excessive exposure to high concentrations of dust may cause irritation to the eyes.
- **Skin:** Skin contact with dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.
- **Ingestion:** Ingestion of dust may cause nausea and/or vomiting.

Chronic Effects:

Individuals with chronic respiratory disorders (i.e., asthma, chronic bronchitis, emphysema, etc.) may be adversely affected by any fume or airborne particulate matter exposure. Persons with pre-existing skin disorders may be more susceptible to dermatitis.

4(c) Immediate Medical Attention and Special Treatment: Treat symptomatically.

Section 5 – Fire-fighting Measures

5(a) Suitable (and Unsuitable) Extinguishing Media: Molten metal may react violently with water. Use extinguishers appropriate for surrounding materials.

5(b) Specific Hazards Arising from the Chemical: Not applicable for solid product. Do not use water on molten iron.

5(c) Special Protective Equipment and Precautions for Fire-fighters: Self-contained NIOSH approved respiratory protection and full protective clothing should be worn when fumes and/or smoke from fire are present. Heat and flames cause emittance of acrid smoke and fumes. Do not release runoff from fire control methods to sewers or waterways. Firefighters should wear full face-piece self-contained breathing apparatus and chemical protective clothing with thermal protection. Direct water stream will scatter and spread flames and, therefore, should not be used.

Section 6 - Accidental Release Measures

6(a) Personal Precautions, Protective Equipment and Emergency Procedures: Not applicable in solid state. For spills involving molten iron, personnel should be protected against contact with eyes and skin and avoid inhalation of dust/fume. For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust. Personnel should be protected against contact with eyes and skin. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air. Do not release into sewers or waterways. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, provincial, state, and local regulations.

6(b) Methods and Materials for Containment and Clean Up: Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, provincial, state, and local regulations. Follow applicable regulations (e.g. 29 CFR 1910.120) and all other pertinent federal, provincial, state, and local requirements.

Section 7 - Handling and Storage

7(a) Precautions for Safe Handling: Wash thoroughly after handling. Do not breathe dusts or fume. Do not eat drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Use only outdoors or in a well ventilated area. Avoid direct contact on skin, eyes or on clothing. Emergency safety showers and eye wash stations should be present.

7(b) Conditions for Safe Storage, Including any Incompatibilities: Whenever feasible, store locked up.

Section 8 - Exposure Controls/Personal Protection

8(a) Occupational Exposure Limits (OELs): The following exposure limits are offered as reference, for an experienced industrial hygienist to review.

Ingredients	Ontario TWA¹	ACGIH TLV²	OSHA PEL³	NIOSH REL⁴	IDLH⁵
Iron and Iron Oxides	5.0 mg/m ³ (as iron oxide, respirable fraction ⁶)	5.0 mg/m ³ (as iron oxide, respirable fraction ⁶)	10 mg/m ³ (as iron oxide fume)	5.0 mg/m ³ (as iron oxide dust and fume)	2,500 mg Fe/m ³
Calcium Oxide	2.0 mg/m ³	2.0 mg/m ³	5.0 mg/m ³	2.0 mg/m ³	25 mg/m ³
Silica, Fused	0.1 mg/m ³ (as respirable fraction ⁶)	10 mg/m ³ (as inhalable fraction ⁷ , PNOS) ⁸ 3.0 mg/m ³ (as respirable fraction, ⁶ PNOS)	0.05 mg/m ³ (respirable fraction ⁸ , all forms) 0.025 mg/m ³ AL (respirable fraction ⁸ , all forms)	0.05 mg/m ³	NE
Magnesium Oxide	10 mg/m ³ (as inhalable fraction ⁷)	10 mg/m ³ (as inhalable fraction ⁷)	15 mg/m ³	NE	750 mg/m ³
Manganese	0.2 mg/m ³	0.02 mg/m ³ (as respirable fraction ⁶) 0.1 mg/m ³ (as inhalable fraction ⁷)	“C” 5.0 mg/m ³ (as Fume & Mn compounds)	1.0 mg/m ³ (as Fume & Mn compounds) STEL 3.0 mg/m ³	500 mg Mn/m ³
Aluminum Oxide	1.0 mg/m ³ (as aluminum, respirable fraction ⁶)	1.0 mg/m ³ (as aluminum, respirable fraction ⁶)	15 mg/m ³ (as total dust, PNOR) ⁹ 5.0 mg/m ³ (as respirable fraction, PNOR)	15 mg/m ³ (as total dust, ⁹ 5.0 mg/m ³ (as respirable fraction)	NE
Titanium Dioxide	10 mg/m ³ (as TiO ₂)	10 mg/m ³ (as TiO ₂)	15 mg/m ³ (as TiO ₂ , total dust)	LFC ¹⁰ (as TiO ₂)	5,000 mg/m ³ (as TiO ₂)

NE - None Established

1. Time-Weighted Average (TWA) limits established by the Ontario Ministry of Labour are 8-hour TWA concentrations unless otherwise noted.
2. Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
3. OSHA PELs (Permissible Exposure Limits) are 8-hour TWA (Time-Weighted Average) concentrations unless otherwise noted. A (“C”) designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. An Action level (AL) is used by OSHA and NIOSH to express a health or physical hazard. They indicate the level of a harmful or toxic substance/activity, which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring. Action Levels are generally set at one half of the PEL but the actual level may vary from standard to standard. The intent is to identify a level at which the vast majority of randomly sampled exposures will be below the PEL.
4. The National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH-REL) Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the U.S. federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
5. The “immediately dangerous to life or health air concentration values (IDLHs)” are used by NIOSH as part of the respirator selection criteria and were first developed in the mid-1970’s by NIOSH. The Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs) is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision in 1994.
6. Respirable fraction. The concentration of respirable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs® and BEIs® based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices – as cited by Ministry of Labour (MOL) R.R.O. 833/90.
7. Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH TLVs® and BEIs® based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices – as cited by Ministry of Labour (MOL) R.R.O. 833/90.
8. PNOS. Particles (Insoluble or Poorly Soluble) Not Otherwise Specified defined in the ACGIH TLVs® and BEIs® based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices – as cited by Ministry of Labour (MOL) R.R.O. 833/90.
9. PNOR (Particulates Not Otherwise Regulated). All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by a limit which is the same as the inert or nuisance dust limit of 15 mg/m³ for total dust and 5 mg/m³ for the respirable fraction.
10. LFC – Lowest Feasible Concentration, Refer to Section 11, Toxicological Information.

Section 8 - Exposure Controls/Personal Protection (continued)

8(b) Appropriate Engineering Controls: Local exhaust ventilation should be used to control the emission of air contaminants. General dilution ventilation may assist with the reduction of air contaminant concentrations. Emergency eye wash stations and deluge safety showers should be available in the work area.

8(c) Individual Protection Measures:

- **Respiratory Protection:** Seek professional advice prior to respirator selection and use. In the US, follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only a NIOSH-approved respirator. In Ontario, follow CSA Standard Z94.4-11 “Selection Care and Use of Respirators” or the “NIOSH Guide to the Selection and Use of Particulate Respirators (1996)” for additional information. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face negative-pressure air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.

Warning! Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

- **Eyes:** Wear eye protection/face protection. For molten iron or the generation of airborne particulates, use safety glasses to prevent eye contact as required. A face shield should be used when appropriate to prevent contact with splashed materials.
- **Skin:** Wear protective gloves. For molten iron or the generation of airborne particulates, use protective clothing to prevent skin contact. Take off contaminated clothing and wash before reuse.
- **Other protective equipment:** An eyewash fountain and deluge shower should be readily available in the work area.

Section 9 - Physical and Chemical Properties

9(a) Appearance (physical state, color, etc.): Gray/black solid

9(b) Odor: NA

9(c) Odor Threshold: NA

9(d) pH: NA

9(e) Melting Point/Freezing Point: ND

9(f) Initial Boiling Point and Boiling Range: NA

9(g) Flash Point: NA

9(h) Evaporation Rate: NA

9(i) Flammability (solid, gas): Not flammable

NA - Not Applicable

ND - Not Determined for product as a whole

9(j) Upper/Lower Flammability or Explosive Limits: NA

9(k) Vapor Pressure: NA

9(l) Vapor Density (Air = 1): NA

9(m) Relative Density: NA

9(n) Solubility(ies): ND

9(o) Partition Coefficient n-octanol/water: NA

9(p) Auto-ignition Temperature: ND

9(q) Decomposition Temperature: ND

9(r) Viscosity: ND

Section 10 - Stability and Reactivity

10(a) Reactivity: Not Determined (ND)

10(b) Chemical Stability: Iron Desulphurization Scrap is stable under normal storage and handling conditions.

10(c) Possibility of Hazardous Reaction: None Known






10(d) Conditions to Avoid: Calcium oxide will react with water to form calcium hydroxide.

10(e) Incompatible Materials: Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

10(f) Hazardous Decomposition Products: Oxides of carbon, metal oxides and toxic vapors may be released at elevated temperatures.

Section 11 - Toxicological Information

11(a-j) Information on Toxicological Effects: The following toxicity data has been determined for **Iron Desulphurization Scrap** by using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of WHMIS, OSHA and the EU CPL:

Hazard Classifications	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA / WHMIS			
Acute Toxicity Hazard (covers Categories 1-4)	4	4 ^a		Warning	Harmful if swallowed.
Skin Irritation (covers Categories 1A, 1B, 1C, and 2)	1B	1B ^b		Danger	Causes severe skin burns and eye damage.
Eye Damage/Irritation (covers Categories 1, 2A and 2B)	1	1 ^c		Danger	Causes serious eye damage.
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	3	3 ⁱ		Warning	May cause respiratory irritation.
STOT Following Repeated Exposure (covers Categories 1 and 2)	1	1 ^j		Danger	Causes damage to lungs through prolonged or repeated exposure.

* Not Applicable

The Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

- a. No LC₅₀ or LD₅₀ has been established for **Iron Desulphurization Scrap**. The following data has been determined for the components:
 - **Iron Oxide:** LD₅₀ = >10,000 mg/kg (Oral/ Rat)
 - **Titanium Dioxide:** LD₅₀ > 10,000 mg/kg (Oral/Rat); LC₅₀ > 6.82 mg/l (Inhalation/Rat)
 - **Iron:** Rat LD₅₀ = 98.6 g/kg (REACH) Rat LD₅₀ > 9000 mg/kg (NLM Toxnet)
 - **Manganese:** Rat LD₅₀ > 2000 mg/kg (REACH)
 - LD₅₀ = 1060 mg/kg (IUCLID) Rat LD₅₀ > 9000 mg/kg (NLM Toxnet)
 - LD₅₀ = 984 mg/kg (IUCLID) Rabbit
 - LD₅₀ = 890 mg/kg (IUCLID)
 - Guinea Pig LD₅₀ = 20 g/kg (TOXNET)
- b. No Skin (Dermal) Irritation data available for **Iron Desulphurization Scrap** as a mixture. The following Skin (Dermal) Irritation data has been determined for the components:
 - **Iron Oxide:** Moderately irritating.
 - **Magnesium Dioxide:** Severe skin irritant in human (HSDB).
- c. No Eye Irritation data available for **Iron Desulphurization Scrap** as a mixture. The following Eye Irritation information was found for the components:
 - **Iron Oxide:** Severely irritating; may cause burns. Human Corrosive (IUCLID).
 - **Iron:** Causes eye irritation.
 - **Calcium Oxide:** Rabbit Irritating (REACH).
 - **Magnesium dioxide:** Severe eye irritant in human (HSDB).
- d. No Skin (Dermal)/Respiratory Sensitization data available for **Iron Desulphurization Scrap** as a mixture or its individual components.
- e. No Aspiration Hazard data available for **Iron Desulphurization Scrap** as a mixture or its individual components.
- f. No Germ Cell Mutagenicity data available for **Iron Desulphurization Scrap** as a mixture. The following Germ Cell Mutagenicity information was found for the components:
 - **Iron Oxide:** Both positive and negative data.
 - **Iron:** IUCLID has found some positive and negative findings in vitro
- g. Carcinogenicity: IARC, NTP, and OSHA do not list **Iron Desulphurization Scrap** as carcinogens. The following Carcinogenicity information was found for the components:
 - **Iron Oxide:** IARC-3, TLV-A4
 - **Titanium Dioxide** - According to the experimental studies and reviewed IUCLID toxicological data, Rats (but not mice) exposed to ultrafine TiO₂ particles at 10 mg/m³ developed lung tumors; probably results from inhibited particle clearance from lung. Titanium and titanium compounds, for the most part, have been considered virtually inert and not highly toxic to man. Titanium dioxide has recently been considered a potential occupational carcinogen based on inhalation studies on rats. Results indicated increases in bronchioloalveolar adenomas and squamous cell carcinomas. As a result, NIOSH recommends exposure to titanium dioxide be reduced to the lowest feasible concentration (LFC). IARC lists titanium dioxide as 2B – possibly carcinogenic to humans while ACGIH identifies it as not classifiable.
- h. No Toxic Reproduction data available for **Iron Desulphurization Scrap** as a mixture or individual components.

Section 11 - Toxicological Information (continued)

11(a-j) Information on Toxicological Effects (continued):

- i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **Iron Desulphurization Scrap** as a mixture. The following STOT following a Single Exposure data was found for the components:
- **Iron Oxide:** May cause lung irritation.
 - **Iron:** Irritating to respiratory tract.
 - **Calcium Oxide:** Can cause respiratory tract irritation, skin and eye irritation.
- j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **Iron Desulphurization Scrap** as a whole. The following STOT following Repeated Exposure data was found for the components:
- **Iron Oxide:** Some pulmonary and lung effects reported.
 - **Titanium Dioxide:** Inflammatory lesions in rat lungs produced by 3-month exposures to either 22.3 mg/m³ of ultrafine TiO₂; lesions “regressed” during a 1-year period following cessation of exposure.
 - **Manganese:** Inhalation of metal fumes - Degenerative changes in human brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock *et al.*, 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2017, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCRID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

Acute Effects by component:

- **Iron and Iron Oxide:** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage.
- **Calcium Oxide:** Calcium oxide is an eye and skin irritant.
- **Amorphous Silica (Silicon Dioxide):** Not Reported/Not Classified
- **Magnesium Oxide:** Not Reported/Not Classified
- **Manganese:** Manganese is harmful if swallowed.
- **Aluminum Oxide:** Inhalation may cause cough.
- **Titanium Dioxide:** Not Reported/Not Classified

Delayed (chronic) Effects by Component:

- **Iron and Iron Oxide:** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.
- **Calcium Oxide:** Depending on the concentration and duration of exposure, repeated or prolonged inhalation may cause inflammation of the respiratory passages, ulcers of the mucous membranes, and possible perforation of the nasal septum. Repeated or prolonged skin contact may cause dermatitis.
- **Amorphous Silica (Silicon Dioxide):** Silicon dusts are a low health risk by inhalation and should be treated as a nuisance dust. Eye contact with pure material can cause particulate irritation. Skin contact with silicon dusts may cause physical abrasion.
- **Magnesium Oxide:** Irritation of eyes, nose, and throat. Symptoms may include dryness of nose and mouth, cough, feeling of weakness, tightness of chest, muscular pain, chills, fever, headache, nausea, and vomiting.
- **Manganese:** Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Occupational overexposure (Manganese) is a progressive, disabling neurological syndrome that typically begins with relatively mild symptoms and evolves to include altered gait, fine tremor, and sometimes, psychiatric disturbances. May cause damage to lungs with repeated or prolonged exposure.
- **Aluminum Oxide:** Considered to be an inert or nuisance dust.
- **Titanium Dioxide:** Titanium Dioxide accumulates in the lungs – and over time mostly in alveoli and macrophages. Exposure by inhalation route should be reduced to lowest levels to reduce accumulation in lungs. This accumulation is apparently responsible for carcinogenesis in rats only (no such response in mouse or hamster).

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Section 12 - Ecological Information

12(a) Ecotoxicity (aquatic & terrestrial): No data available for the product, **Iron Desulphurization Scrap** as a whole. However, individual components of the product have been found to be toxic to the environment. Dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- **Iron Oxide: LC₅₀:** >1000 mg/L; Fish
- **Calcium Oxide: LC₅₀:** 159 mg/L; invertebrates
- **Aluminum Oxide: LC₅₀:** >100 mg/L; Fish and algae

12(b) Persistence & Degradability: No Data Available

12(c) Bioaccumulative Potential: No Data Available

12(d) Mobility (in soil): No Data Available

12(e) Other Adverse Effects: None Known

Additional Information:

Hazard Category: No Category **Signal Word:** No Signal Word

Hazard Symbol: No Hazard Symbol

Hazard Statement: No Hazard Statement

Section 13 - Disposal Considerations

Disposal: Dispose of contents/container in accordance with local/regional/international regulations.

Container Cleaning and Disposal: Follow applicable federal, provincial, state and local regulations. Observe safe handling precautions. European Waste Catalogue 10-02-99 (wastes not otherwise specified), 16-03-04 (inorganic wastes other than those mentioned in 16-03-03).

Please note this information is for Iron Desulphurization Scrap in its original form. Any alterations can void this information.

Section 14 - Transport Information

14 (a-g) Transportation Information:

TDG/US Department of Transportation (DOT) under federal TDG and 49 CFR 172.101 **does not** regulate **Iron Desulphurization Scrap** as a hazardous material. All federal, provincial, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

Shipping Name: Iron Desulphurization Scrap
Shipping Symbols: NA
Hazard Class: NA
UN No.: NA
Packing Group: NA
DOT/IMO Label: NA
Special Provisions (172.102): NA

Packaging Authorizations
 a) **Exceptions:** NA
 b) **Non-bulk:** NA
 c) **Bulk:** NA

Quantity Limitations
 a) **Passenger Aircraft or Rail:** NA
 b) **Cargo Aircraft Only:** NA
Vessel Stowage Location: NA
DOT reportable quantities: NA

International Maritime Dangerous Goods (IMDG) and the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

Regulations Concerning the International Carriage of Dangerous Goods by Road (ADR) **does not** regulate **Iron Desulphurization Scrap** as a hazardous material.

Shipping Name: Iron Desulphurization Scrap
Classification Code: NA
UN No.: NA
Packing Group: NA
ADR Label: NA
Special Provisions: NA
Limited Quantities: NA

Packaging
 a) **Packing Instructions:** NA
 b) **Special Packing Provisions:** NA
 c) **Mixed Packing Provisions:** NA

Portable Tanks & Bulk Containers a)
Instructions: NA
b) Special Provisions: NA

International Air Transport Association (IATA) **does not** regulate **Iron Desulphurization Scrap** as a hazardous material.

Shipping Name: Iron Desulphurization Scrap
Class/Division: NA
Hazard Label (s): NA
UN No.: NA
Packing Group: NA
Excepted Quantities (EQ): NA

Passenger & Cargo Aircraft Limited Quantity (EQ)

Pkg Inst: NA

Max Net Qty/Pkg:
NA

Pkg Inst: NA

Max Net Qty/Pkg:
NA

Cargo Aircraft Only Pkg Inst: NA

Max Net Qty/Pkg: NA

Special Provisions:
NA

ERG Code: NA

Pkg Inst – Packing Instructions Max Net Qty/Pkg – Maximum Net Quantity per Package ERG – Emergency Response Drill Code

Iron Desulphurization Scrap does not have a **Transport Dangerous Goods (TDG)** classification.

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Section 15 - Regulatory Information

Regulatory Information: The following listing of regulations relating to a Stelco product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities. This product and/or its constituents are subject to the following regulations:

SARA Potential Hazard Categories: Immediate Acute Health Hazard, Delayed Chronic Health Hazard.

Section 313 Supplier Notification: The product, **Iron Desulphurization Scrap** contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS #	Chemical Name	Percent by Weight
7439-96-5	Manganese compounds	3 max
1344-28-1	Aluminum Oxide	3 max

State Regulations: The product, **Iron Desulphurization Scrap** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

California Prop. 65: The product, **Iron Desulphurization Scrap** does not contain elements known to the State of California to cause cancer or reproductive toxicity.

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations and the SDS contains all the information required by the Hazardous Products Regulations.

Section 16 - Other Information

Prepared By: Stelco Inc.

Revision History:

- 6/30/2017 - Update to Stelco
- 04/14/2015 - Revision
- 04/21/2014 - Update to OSHA HAZ COM 2012
- 05/10/2011 – Original

Additional Information:

Hazardous Material Identification System (HMIS) Classification

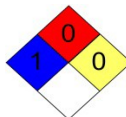
Health Hazard	1
Fire Hazard	0
Physical Hazard	0

HEALTH= 1, * Denotes possible chronic hazard if airborne dusts or fumes are generated
Irritation or minor reversible injury possible.

FIRE= 0, Materials that will not burn.

PHYSICAL HAZARDS = 0, Materials that are normally stable, even under fire conditions, will not react with water, polymerize, decompose, condense, or self-react. Non-explosives.

National Fire Protection Association (NFPA)



HEALTH = 1, Exposure could cause irritation but only minor residual injury even if no treatment is given.

FIRE = 0, Materials that will not burn.

INSTABILITY = 0, Normally stable, even under fire exposure conditions, and are not and reactive with water.

Section 16 - Other Information (continued)

ABBREVIATIONS/ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	NIF	No Information Found
BEIs	Biological Exposure Indices	NIOSH	National Institute for Occupational Safety and Health
CAS	Chemical Abstracts Service	NTP	National Toxicology Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	ORC	Organization Resources Counselors
CFR	Code of Federal Regulations	OSHA	Occupational Safety and Health Administration
CNS	Central Nervous System	PEL	Permissible Exposure Limit
GI, GIT	Gastro-Intestinal, Gastro-Intestinal Tract	PNOR	Particulate Not Otherwise Regulated
HMIS	Hazardous Materials Identification System	PNOC	Particulate Not Otherwise Classified
IARC	International Agency for Research on Cancer	PPE	Personal Protective Equipment
LC50	Median Lethal Concentration	ppm	parts per million
LD50	Median Lethal Dose	RCRA	Resource Conservation and Recovery Act
LD_{Lo}	Lowest Dose to have killed animals or humans	RTECS	Registry of Toxic Effects of Chemical Substances
LEL	Lower Explosive Limit	SARA	Superfund Amendment and Reauthorization Act
µg/m³	microgram per cubic meter of air	SCBA	Self-contained Breathing Apparatus
mg/m³	milligram per cubic meter of air	STEL	Short-term Exposure Limit
mppcf	million particles per cubic foot	TLV	Threshold Limit Value
SDS	Safety Data Sheet	TWA	Time-weighted Average
MSHA	Mine Safety and Health Administration	UEL	Upper Explosive Limit
MOL	Ontario Ministry of Labour	WHMIS	Workplace Hazardous Materials Information System
NFPA	National Fire Protection Association		

Disclaimer: This information is taken from sources or based upon data believed to be reliable. However, Stelco Inc. makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.



The Steel Company of Canada

Iron Desulphurization Scrap

Signal Word: DANGER

Symbols:



HAZARD STATEMENTS:

Causes damage to lungs through prolonged or repeated exposure.
Causes severe skin burns and serious eye damage.
Harmful if swallowed.
May cause respiratory irritation.

PRECAUTIONARY STATEMENTS

Do not breathe dusts or fume.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well ventilated area. Get medical advice/attention if you feel unwell.
If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor/physician.
If in 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.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
If swallowed: Rinse mouth. Do **NOT** induce vomiting. Call a poison control center or doctor/physician if you feel unwell.
Store locked up.
Dispose of contents in accordance with federal, provincial, state and local regulations.

Stelco Inc.
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