

Flue dust, zinc-refining

Waelz oxide; Zinc rich flue dust.

SDS Revision Date (dd/mm/yyyy): 03/04/2018

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## SAFETY DATA SHEET

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended.

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

**1.1 Product identifier : Flue dust, zinc-refining**

**CAS No** : 69012-63-1  
**EC No** : 273-760-6  
**Annex VI Index No** : None.  
**Product Code(s)** : Waelz oxide; Zinc rich flue dust.

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

: Raw material for production of zinc metal.  
Restricted to professional users. Refer also to restrictions found in REACH Annex XVII items 23, 28, 30, and 63.

**1.3 Details of the supplier of the safety data sheet:**

**American Zinc Recycling**

4955 Steubenville Pike, Suite 405  
Pittsburgh, Pennsylvania, USA  
15205

Email: info@azr.com

Website: <http://azr.com/american-zinc>

**Telephone** : 001-724-773-2223

**1.4 Emergency Telephone Number**

: +1 (703) 527-3887 (Chemtrec - U.S.)

### SECTION 2. HAZARDS IDENTIFICATION

**Most Important Hazard**

White / grey solid (powder). Odourless.

Continuous long-term exposure above the permissible exposure limits are suspected to cause sterility, cancer, and/or organ damage. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS.

Harmful to aquatic life with long lasting effects. Avoid release to the environment. See Section 12 for more environmental information.

**2.1 Classification of the substance or mixture**

This substance is classified as hazardous according to Regulation (EC) No. 1272/2008. Classification:

Germ cell mutagenicity - Category 2; H341  
Carcinogenicity - Category 1B; H350  
Reproductive toxicity - Category 1A; H360Df  
Specific target organ toxicity, repeated exposure - Category 1; H372  
Chronic aquatic hazard - Category 3; H413

**2.2 Label elements**

Hazard pictogram(s)



Signal word:

DANGER!

Restricted to professional users.

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### Hazard statements:

- H341 - Suspected of causing genetic defects.
- H350 - May cause cancer.
- H360Df - May damage the unborn child. Suspected of damaging fertility.
- H372 - Causes damage to organs through prolonged or repeated exposure.
- H412 - Harmful to aquatic life with long lasting effects.

### Precautionary statements:

- P201 - Obtain special instructions before use.
- P260 - Do not breathe dust or fumes.
- P280 - Wear protective gloves/clothing and eye/face protection.
- P308 + P313 - IF exposed or concerned: Get medical advice/attention.
- P405 - Store locked up.
- P501 - Dispose of contents/container in accordance with local regulation.

### 2.3 Other hazards

#### Other hazards which do not result in classification:

Inhalation of fumes may result in metal fume fever, a flu-like illness. Dusts may cause irritation of the mucous membranes and respiratory tract. May cause gastrointestinal irritation.

#### PBT assessment:

This information is not available.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

Chemical nature: Substance [Zinc oxide enriched flue dust (Waelz oxide)]

The following substances shall be indicated according to legislation:

Chemical name	CAS #	EC No.	Annex VI Index No	Concentration
Flue dust, zinc-refining	69012-63-1	273-760-6	None.	100%
<b>Waelz oxide constituents:</b>				
Zinc oxide	1314-13-2	215-222-5	030-013-00-7	68.0 - 85.0
Franklinite	12063-19-3	235-052-5	None.	0.0 - 10.0
Potassium chloride	7447-40-7	231-211-8	None.	4.0 - 6.0
Laurionite	15860-78-3	No information available.	082-001-00-6	0.0 - 6.0
Sodium chloride	7647-14-5	231-598-3	None.	3.0 - 5.0
Matlockite	14639-92-0	No information available.	082-001-00-6	0.0 - 5.0
Magnetite	1317-61-9	215-277-5	None.	0.0 - 3.0
Cadmium oxide	1306-19-0	215-146-2	048-002-00-0	0.1 - 2.5
Manganese oxide	1344-43-0	215-695-8	None.	0.15 - 1.5
Silicon dioxide	7631-86-9	231-545-4	None.	0.2 - 1.0
Carbon	7440-44-0	231-153-3	None.	0.05 - 0.7

### 3.2 Mixtures

Not applicable

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### SECTION 4. FIRST-AID MEASURES

#### 4.1 Description of first aid measures

- Ingestion* : Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical attention/advice.
- Inhalation* : If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. IF exposed or concerned: Get medical attention/advice.
- Skin contact* : For skin contact, wash with soap and water while removing contaminated clothing. IF exposed or concerned: Get medical advice/attention. Launder clothing before reuse.
- Eye contact* : Immediately flush eye(s) with plenty of water. IF exposed or concerned: Get medical advice/attention.

#### 4.2 Most important symptoms and effects, both acute and delayed

- : Suspected of causing genetic defects.  
May cause cancer. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing.  
May damage the unborn child. Suspected of damaging fertility. Symptoms may include spontaneous abortion, pre-term delivery, stillbirths, alterations in sperm, decreased male fertility, and effects on neurological development including decreased intelligence, shortened attention span, and slowed reaction times.  
Causes damage to organs through prolonged or repeated exposure. Contains: lead and lead compounds; Manganese compounds; Cadmium.  
Lead accumulates in body tissues and prolonged overexposure to even low levels may eventually result in lead toxicity syndrome which may result in permanent damage or death. Lead poisoning is characterized by a metallic taste in the mouth, loss of appetite, indigestion, nausea, vomiting, constipation, abdominal cramps, disturbance of rest and sleep, and weakness. Additional symptoms may include a blue "lead line" on the gums and an accumulation of lead in the blood resulting in shock, coma and death.  
Manganese can attack the central nervous system, causing symptom's similar to Parkinson's Disease. Chronic manganese exposures can lead to neurological problems such as apathy, drowsiness, weakness, spastic gait, paralysis, and other neurological problems resembling Parkinsonism. These symptoms can become progressive and permanent if not treated.  
Evidence from experimental animal systems indicates a potential neurotoxic hazard for cadmium.  
Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath. Inhalation of dusts may cause respiratory irritation. May cause coughing and breathing difficulties.  
May cause slight eye and skin irritation. Symptoms may include stinging and tearing. Direct skin contact may cause temporary redness.  
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

#### 4.3 Indication of any immediate medical attention and special treatment needed

- : Provide general supportive measures and treat symptomatically.

### SECTION 5. FIRE-FIGHTING MEASURES

#### 5.1 Extinguishing media

- Suitable extinguishing media* : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

- Unsuitable extinguishing media* : None known.

#### 5.2 Special hazards arising from the substance or mixture

- : Not considered flammable.

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### 5.3 Advice for firefighters

#### Protective equipment for fire-fighters

- : Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

#### Special fire-fighting procedures

- : Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray.  
For bulk quantities, use water mist or fog to prevent dispersal of airborne dusts.  
Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

- : Wear suitable protective equipment. Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up.

### 6.2 Environmental precautions

- : Do not allow material to contaminate ground water system. Discharge into the environment must be avoided.

### 6.3 Methods and material for containment and cleaning up

- : Ventilate the area. Prevent further leakage or spillage if safe to do so. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Contact the proper local authorities. Clean contaminated floors and objects thoroughly while observing environmental regulations.

### 6.4 Reference to other sections

- : Refer to protective measures listed in sections 7 and 8. Refer to Section 13 for disposal of material.

## SECTION 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

- : Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.  
Use only in well-ventilated areas. Wear suitable protective equipment during handling. Wear protective gloves/clothing and eye/face protection. Do not breathe dust or fume. Do not ingest. Avoid contact with skin, eyes and clothing. Keep away from heat. Keep away from acids and other incompatibles. Avoid and control operations which create high vapor or dust concentrations. Wash thoroughly after handling.

### 7.2 Conditions for safe storage, including any incompatibilities

- : Store in a well ventilated place. Inspect periodically for damage or leaks. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Store locked up. Keep away from incompatibles.

### 7.3 Specific end use(s)

- : Raw material

## SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 Control Parameters

<u>Exposure Limits:</u>			
<u>Chemical Name</u>	<u>Exposure Limits</u>	<u>Type</u>	<u>Notes</u>
Flue dust, zinc-refining	None known.	European Union (OEL)	None.

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<b>Zinc oxide</b>	5 mg/m <sup>3</sup> (fumes); 10 mg/m <sup>3</sup> (dust) (TWA)	France (OEL)	None.
	2 mg/m <sup>3</sup> (TWA) 10 mg/m <sup>3</sup> (STEL)	Spain (OEL)	(respirable dust)
	5 mg/m <sup>3</sup> (total dust) (TWA)	Sweden (OEL)	None.
	3 mg/m <sup>3</sup> (respirable dust) (TWA) 3 mg/m <sup>3</sup> (respirable dust) (STEL)	Switzerland (OEL)	None.
<b>Franklinite</b>	None known.	European Union (OEL)	None.
<b>Potassium chloride</b>	5.0 mg/m <sup>3</sup> (TWA)	Bulgaria (OEL)	None.
	5 mg/m <sup>3</sup> (TWA)	Latvia (OEL)	None.
	5 mg/m <sup>3</sup> (TWA)	Lithuania (OEL)	None.
<b>Laurionite</b>	0.15 mg/m <sup>3</sup> (TWA)	European Union (OEL)	(lead and inorganic compounds)
	0.1 mg/m <sup>3</sup> (TWA)	France (OEL)	(as Pb) Carcinogen Reproductive toxicant
	0.15 mg/m <sup>3</sup> (TWA)	Spain (OEL)	(lead and inorganic compounds) Reproductive toxicant
	0.1 mg/m <sup>3</sup> (total inhalable dust); 0.05 mg/m <sup>3</sup> (respirable dust) (TWA)	Sweden (OEL)	(as Pb) Reproductive toxicant
	0.1 mg/m <sup>3</sup> (inhalable) (TWA) 0.8 mg/m <sup>3</sup> (inhalable) (STEL)	Switzerland (OEL)	(as Pb) Carcinogen Reproductive toxicant Developmental
	0.15 mg/m <sup>3</sup> (TWA) 0.45 mg/m <sup>3</sup> (STEL)	The United Kingdom (WELs)	(as Pb)
<b>Sodium chloride</b>	5 mg/m <sup>3</sup> (TWA)	Latvia (OEL)	None.
	5 mg/m <sup>3</sup> (TWA)	Lithuania (OEL)	None.
<b>Matlockite</b>	0.15 mg/m <sup>3</sup> (TWA)	European Union (OEL)	(lead and inorganic compounds)
	0.1 mg/m <sup>3</sup> (TWA)	France (OEL)	(as Pb) Carcinogen Reproductive toxicant
	0.15 mg/m <sup>3</sup> (TWA)	Spain (OEL)	(as Pb) Reproductive toxicant
	0.1 mg/m <sup>3</sup> (total inhalable dust); 0.05 mg/m <sup>3</sup> (respirable dust) (TWA)	Sweden (OEL)	(as Pb) Reproductive toxicant

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	0.1 mg/m <sup>3</sup> (inhalable) (TWA) 0.8 mg/m <sup>3</sup> (inhalable) (STEL)	Switzerland (OEL)	(as Pb) Carcinogen Reproductive toxicant Developmental
	0.15 mg/m <sup>3</sup> (TWA) 0.45 mg/m <sup>3</sup> (STEL)	The United Kingdom (WELs)	(lead and inorganic compounds)
<b>Magnetite</b>	5 mg/m <sup>3</sup> (fumes) (TWA)	Finland (OEL)	(as Fe)
	5 mg/m <sup>3</sup> (fumes) (TWA)	France (OEL)	(as Fe)
	10 mg/m <sup>3</sup> (TWA) 10 mg/m <sup>3</sup> (STEL)	Greece (OEL)	(as Fe)
	5 mg/m <sup>3</sup> (respirable dust) (TWA) 10 mg/m <sup>3</sup> (respirable dust) (STEL)	Poland (OEL)	(as Fe)
	5 mg/m <sup>3</sup> (dust and fume) (TWA)	Spain (OEL)	(as Fe)
	5 mg/m <sup>3</sup> (fumes) (TWA) 10 mg/m <sup>3</sup> (fumes) (STEL)	The United Kingdom (WELs)	(as Fe)
<b>Cadmium oxide</b>	0.05 mg/m <sup>3</sup> (STEL)	France (OEL)	Carcinogen Mutagen Reproductive toxicant
	0.01 mg/m <sup>3</sup> (TWA)	Spain (OEL)	Carcinogen
	0.025 mg/m <sup>3</sup> (TWA) 0.05 mg/m <sup>3</sup> (STEL)	The United Kingdom (WELs)	(fumes) Carcinogen
<b>Manganese oxide</b>	0.02 mg/m <sup>3</sup> (respirable dust) (TWA)	Finland (OEL)	(as Mn)
	1 mg/m <sup>3</sup> (fumes) (TWA)	France (OEL)	(as Mn)
	0.2 mg/m <sup>3</sup> (inhalable) (exposure factor 8); 0.02 mg/m <sup>3</sup> (respirable dust) (exposure factor 8) (TWA)	Germany (OEL)	(as Mn)
	0.2 mg/m <sup>3</sup> (inhalable); 0.05 mg/m <sup>3</sup> (respirable dust) (TWA)	Poland (OEL)	(as Mn)
	0.5 mg/m <sup>3</sup> (TWA) 1.5 mg/m <sup>3</sup> (STEL)	The United Kingdom (WELs)	(as Mn)
<b>Silicon dioxide</b>	4 mg/m <sup>3</sup> (inhalable) (TWA)	Germany (OEL)	None.
	4 mg/m <sup>3</sup> (inhalable); 0.3 mg/m <sup>3</sup> (respirable dust) (TWA)	Switzerland (OEL)	None.
	6 mg/m <sup>3</sup> (inhalable); 2.4 mg/m <sup>3</sup> (respirable dust) (TWA)	The United Kingdom (WELs)	None.
<b>Carbon</b>	10 mg/m <sup>3</sup> (inhalable); 4 mg/m <sup>3</sup> (respirable dust) (TWA)	The United Kingdom (WELs)	None.

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### Biological Exposure Indices:

*France. Biological indicators of exposure (IBE) (National Institute for Research and Security (INRS, ND 2065)*

lead compounds (CAS #'s 15860-78-3, 14639-92-0)

400 µg/L, Determinant: Lead (men), Specimen: Blood

300 µg/L, Determinant: Lead (women), Specimen: Blood

200 µg/L, Determinant: Lead (medical surveillance, men), Specimen: Blood

100 µg/L, Determinant: Lead (medical surveillance, women), Specimen: Blood

Cadmium oxide (CAS # 1306-19-0)

0.005 mg/g Creatinine, Determinant: Cadmium (Background noise on non-exposed subjects), Specimen: Urine

0.005 mg/L, Determinant: Cadmium (Background noise on non-exposed subjects), Specimen: Blood

*Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4*

lead compounds (CAS #'s 15860-78-3, 14639-92-0)

70 µg/dl, Determinant: Lead, Specimen: Blood

### Predicted No Effect Concentration (PNEC):

No information available.

### Derived No Effect Level (DNEL):

No information available.

## 8.2 Exposure controls

### Ventilation and engineering measures

- : Use in a well-ventilated area. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.  
The local exhaust ventilation system should be high efficiency (84%).  
Recommended cyclone/filter (for minimizing dust emissions) efficiency:  
70-90% (cyclones);  
50-80% (dust filters);  
85-95% (double stage, cassette filters)  
Process enclosure should be considered, especially in potentially dusty units.  
Dust levels should be measured in the workplace air (static or individual), according to National regulations.  
In case of insufficient ventilation wear suitable respiratory equipment.

### Respiratory protection

- : Respirator must be worn if exposed to dust. The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.  
Recommended Filter type:  
dust filter-half mask P1 (efficiency 75%)  
dust filter-half mask P2 (efficiency 90%)  
dust filter-half mask P3 (efficiency 95%)  
dust filter-full mask P1 (efficiency 75%)  
dust filter-full mask P2 (efficiency 90 %)  
dust filter-full mask P3 (efficiency 97.5%).

### Skin protection

- : Wear protective gloves/clothing. The suitability for a specific workplace should be discussed with the producers of the protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Gloves are recommended to be ≥ 90% efficient.

### Eye / face protection

- : Wear as appropriate: Goggles; Safety glasses with side shields.

### Other protective equipment

- : Ensure that eyewash stations and safety showers are close to the workstation location.  
Other equipment may be required depending on workplace standards.



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### General hygiene considerations

- : Avoid contact with skin, eyes and clothing. Do not breathe dust or fume. Do not eat, drink or smoke when using this product. Wash hands and face before breaks and immediately after handling the product. Wash contaminated clothing before reuse. Handle in accordance with good industrial hygiene and safety practice.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- Appearance** : White / grey solid (powder).
- Odour** : odourless
- Odour threshold** : No information available.
- pH** : No information available.
- Flash point** : No information available.
- Flashpoint (Method)** : No information available.
- Lower flammable limit (% by vol.)** : No information available.
- Upper flammable limit (% by vol.)** : No information available.
- Flammability (solid, gas)** : The product is not flammable.
- Auto-ignition temperature** : No information available.
- Decomposition temperature** : No information available.
- Oxidizing properties** : None known.
- Explosive properties** : Not explosive
- Initial boiling point and boiling range** : No information available.
- Melting/Freezing point** : > 1000°C (1830°F)
- Relative density** : 4.83
- Solubility in water** : insoluble
- Other solubility(ies)** : No information available.
- Vapour pressure** : No information available.
- Vapour density** : No information available.
- Partition coefficient: n-octanol/water** : No information available.
- Viscosity** : Not applicable.
- Evaporation rate (BuAe = 1)** : No information available.

### 9.2 Other Information

- Volatiles (% by weight)** : No information available.
- Volatile organic Compounds (VOC's)** : No information available.
- Other physical/chemical comments** : No additional information.

## SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity** : Not normally reactive.
- 10.2 Chemical stability** : Stable under normal conditions.



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### 10.3 Possibility of hazardous reactions

: Hazardous polymerization does not occur.

**10.4 Conditions to avoid** : Incompatible products Do not use in areas without adequate ventilation.

### 10.5 Incompatible materials

: Acids; Halogenated compounds; Nitrogen compounds; Oxidizing agents.

### 10.6 Hazardous decomposition products

: In the event of fire the following can be released: Metal oxides

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological effects:

**Acute toxicity** : According to the classification criteria of the European Union, this product is not considered as being an acutely toxic chemical.

**Skin corrosion/Irritation** : According to the classification criteria of the European Union, this product is not considered as being a skin corrosive or irritant.

#### Serious eye damage/irritation

: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

#### Respiratory or skin sensitisation

: According to the classification criteria of the European Union, this product is not considered as being an allergic respiratory sensitiser.  
According to the classification criteria of the European Union, this product is not considered as being an allergic skin sensitiser.

**Germ cell mutagenicity** : This substance is classified as hazardous according to Regulation (EC) No. 1272/2008.

Classification:

Germ cell mutagenicity - Category 2. Suspected of causing genetic defects.

Contains: Cadmium; lead and lead compounds.

Lead compounds are known to cause certain degrees of mutagenicity.

Cadmium may cause irreversible effects in non-reproductive (somatic) cells, based on animal data.

**Carcinogenicity** : This substance is classified as hazardous according to Regulation (EC) No. 1272/2008.

Classification:

Carcinogenicity - Category 1B. May cause cancer. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing.

Contains: Cadmium oxide.

**Reproductive toxicity** : This substance is classified as hazardous according to Regulation (EC) No. 1272/2008.

Classification:

Reproductive toxicant - Category 1. May damage the unborn child. Suspected of damaging fertility. Symptoms may include spontaneous abortion, pre-term delivery, stillbirths, alterations in sperm, decreased male fertility, and effects on neurological development including decreased intelligence, shortened attention span, and slowed reaction times.

Contains: lead compounds; Cadmium compounds.

Lead compounds are known to cause certain reproductive effects in both males and females. Lead compounds are known to cause embryotoxicity.

Cadmium and Cadmium compounds are known to cause reproductive effects in both males and females based on animal studies.

**STOT-single exposure** : According to the classification criteria of the European Union, this product is not expected to cause target organ toxicity through a single exposure.

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**STOT-repeated exposure** : This substance is classified as hazardous according to Regulation (EC) No. 1272/2008.  
Classification:  
Specific target organ toxicity, repeated exposure - Category 1. Causes damage to organs through prolonged or repeated exposure.  
Contains lead and lead compounds. Prolonged overexposure may result in lead toxicity syndrome which may result in permanent damage or death. Lead poisoning is characterized by a metallic taste in the mouth, loss of appetite, indigestion, nausea, vomiting, constipation, abdominal cramps, disturbance of rest and sleep, and weakness. Additional symptoms may include a blue "lead line" on the gums and an accumulation of lead in the blood resulting in shock, coma and death.  
This product also contains: Cadmium compounds; Manganese. Manganese can attack the central nervous system, causing symptom's similar to Parkinson's Disease. Chronic manganese exposures can lead to neurological problems such as apathy, drowsiness, weakness, spastic gait, paralysis, and other neurological problems resembling Parkinsonism. These symptoms can become progressive and permanent if not treated. Evidence from experimental animal systems indicates a potential neurotoxic hazard for cadmium.

**Aspiration hazard** : According to the classification criteria of the European Union, this product is not considered as being an aspiration hazard to humans.

**Toxicological data** : See below for toxicological data on the substance.

<u>Chemical name</u>	<u>LC<sub>50</sub> (4hr)</u> <u>inh, rat</u>	<u>LD<sub>50</sub></u>	
		<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Flue dust, zinc-refining	> 5.371 mg/L	> 2000 mg/kg	> 2000 mg/kg
<b>Waelz oxide constituents:</b>			
Zinc oxide	> 5.7 mg/L (dust) (No mortality)	> 5000 mg/kg	> 2000 mg/kg (No mortality)
Franklinite	No information available.	No information available.	No information available.
Potassium chloride	No information available.	3020 mg/kg	No information available.
Laurionite	> 5.05 mg/L (dust) (No mortality) (Read-across)	> 1947 mg/kg (No mortality) (Read-across)	> 2000 mg/kg (No mortality) (Read-across)
Sodium chloride	> 10.5 mg/L (dust)	3000 mg/kg	> 10 000 mg/kg
Matlockite	No information available.	No information available.	No information available.
Magnetite	No information available.	> 5000 mg/kg	No information available.
Cadmium oxide	0.125 mg/L (dust) (mouse) 0.01 - 0.0125 mg/L (fumes) (rat)	72 mg/kg	No information available.
Manganese oxide	> 5.35 mg/L (dust) (No mortality)	> 2000 mg/kg (No mortality)	No information available.
Silicon dioxide	No information available.	3160 mg/kg	> 5000 mg/kg
Carbon	> 64.4 mg/L (dust)	> 2000 mg/kg (No mortality)	No information available.

**Routes of exposure** : Eye contact; Skin contact; Inhalation; Ingestion

Flue dust, zinc-refining

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**Effects of acute exposure** : *Inhalation:* Dusts may cause irritation of the mucous membranes and respiratory tract. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Inhalation of fumes may result in metal fume fever, a flu-like illness. Symptoms of metal fume fever may include fever, fatigue, vomiting, muscle aches and shortness of breath.

*Skin contact:* Direct skin contact may cause slight or mild, transient irritation. Direct skin contact may cause temporary redness.

*Eye contact:* Direct eye contact may cause slight or mild, transient irritation. Dust contact with the eyes can lead to mechanical irritation. Symptoms may include stinging and tearing.

*Ingestion:* Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

### Potential Chronic Health Effects

: Pneumoconiosis, or "dusty lung" disease, may result from chronic exposure to any dust. Repeated or prolonged inhalation of fine dusts may cause an increase in mucous production.

**Other important hazards** : Overexposure to lead dust and fumes adversely affects blood and blood forming tissues, kidneys, liver and the central/peripheral nervous systems and male/female reproductive organs.

## SECTION 12. ECOLOGICAL INFORMATION

**12.1 Toxicity** : Harmful to aquatic life with long lasting effects. The product should not be allowed to enter drains, water courses or the soil.

The following tables list individual ingredient ecotoxicity data for fish, daphnia and algae.

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### Ecotoxicity data:

<u>Ingredients</u>	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Flue dust, zinc-refining	69012-63-1	> 100 mg/L (Zebra fish)	No information available.	None.
Zinc oxide	1314-13-2	1.1 mg/L (Rainbow trout)	No information available.	None.
Franklinite	12063-19-3	No information available.	No information available.	None.
Potassium chloride	7447-40-7	880 mg/L (Fathead minnow)	No information available.	None.
Laurionite	15860-78-3	No information available.	No information available.	None.
Sodium chloride	7647-14-5	5480 mg/L (Bluegill sunfish)	252 mg/L (33 days) (Fathead minnow)	None.
Matlockite	14639-92-0	No information available.	No information available.	None.
Magnetite	1317-61-9	No information available.	No information available.	None.
Cadmium oxide	1306-19-0	4.48 mg/L (Channel catfish (Read-across))	0.0013 mg/L (Rainbow trout) (Read-across)	10
Manganese oxide	1344-43-0	> 100 mg/L (Rainbow trout)	No information available.	None.
Silicon dioxide	7631-86-9	No information available.	No information available.	None.
Carbon	7440-44-0	> 100 mg/L (Zebra fish)	No information available.	None.

**Flue dust, zinc-refining**

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<u>Ingredients</u>	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Flue dust, zinc-refining	69012-63-1	> 100 mg/L (Daphnia magna)	No information available.	None.
Zinc oxide	1314-13-2	0.098 mg/L (Daphnia magna)	No information available.	10
Franklinite	12063-19-3	No information available.	No information available.	None.
Potassium chloride	7447-40-7	177 mg/L (Daphnia magna)	130 mg/L	None.
Laurionite	15860-78-3	No information available.	No information available.	None.
Sodium chloride	7647-14-5	4136 mg/L (Daphnia magna)	314 mg/L Daphnia pulex (Water flea)	None.
Matlockite	14639-92-0	No information available.	No information available.	None.
Magnetite	1317-61-9	No information available.	No information available.	None.
Cadmium oxide	1306-19-0	0.042 mg/L Daphnia pulex (Water flea) (Read-across)	No information available.	10
Manganese oxide	1344-43-0	> 100 mg/L (Daphnia magna)	No information available.	None.
Silicon dioxide	7631-86-9	No information available.	No information available.	None.
Carbon	7440-44-0	> 100 mg/L (Daphnia magna)	No information available.	None.

<u>Ingredients</u>	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Flue dust, zinc-refining	69012-63-1	12.3 mg/L/72hr (Green algae)	No information available.	None.
Zinc oxide	1314-13-2	0.044 mg/L/72hr (Green algae)	No information available.	10
Franklinite	12063-19-3	No information available.	No information available.	None.
Potassium chloride	7447-40-7	> 100 mg/L/72hr (Green algae)	≥ 100 mg/L/72hr	None.
Laurionite	15860-78-3	No information available.	No information available.	None.
Sodium chloride	7647-14-5	No information available.	No information available.	None.
Matlockite	14639-92-0	No information available.	No information available.	None.
Magnetite	1317-61-9	No information available.	No information available.	None.
Cadmium oxide	1306-19-0	0.09 mg/L/72hr (Green algae)	No information available.	10
Manganese oxide	1344-43-0	> 100 mg/L/72hr (Green algae)	32 mg/L/72hr	None.
Silicon dioxide	7631-86-9	No information available.	No information available.	None.
Carbon	7440-44-0	> 100 mg/L/72hr (Green algae)	≥ 100 mg/L/72hr	None.

**12.2 Persistence and degradability**

: Biodegradation is not applicable to metals/inorganic substances.

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### 12.3 Bioaccumulation potential

- : Zinc is a natural, essential element, which is needed for the optimal growth and development of all living organisms, including man. All living organisms have homeostasis mechanisms that actively regulate zinc uptake and absorption/excretion from the body; due to this regulation, zinc and zinc compounds do not bioaccumulate or biomagnify.

<u>Components</u>	<u>Partition coefficient n-octanol/water (log Kow)</u>	<u>Bioconcentration factor (BCF)</u>
Zinc oxide (CAS 1314-13-2)	- 1.53 (estimated)	No information available.
Potassium chloride (CAS 7447-40-7)	- 0.46 (calculated)	No information available.
Sodium chloride (CAS 7647-14-5)	- 0.46	No information available.

### 12.4 Mobility in soil

- : For metals, the transport and distribution over the different environmental compartments e. g. the water (dissolved fraction, fraction bound to suspended matter), soil (fraction bound or complexed to the soil particles, fraction in the soil pore water...) is described and quantified by the metal partition coefficients between these different fractions. In the CSR, a solids-water partitioning coefficient of 158.5 l/kg (log value 2.2) was applied for zinc in soils (CSR zinc 2010).

### 12.5 Results of PBT and vPvB assessment

- : This information is not available.

### 12.6 Other Adverse Environmental effects


- : No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste Treatment Methods:

- Handling for Disposal** : Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8.
- Methods of Disposal** : Dispose of in accordance with the European Directives on waste and hazardous waste. Waste must be classified and labelled prior to recycling or disposal. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

## SECTION 14. TRANSPORTATION INFORMATION

<i>Regulatory Information</i>	<b>14.1 UN Number</b>	<b>14.2 UN proper shipping name</b>	<b>14.3 Transport hazard class(es)</b>	<b>14.4 Packing Group</b>	<i>Label</i>
ADR/RID	None.	Not regulated	Not regulated	None	
EU ADR/RID Classification Code	Not applicable.				
EU ADR / RID Hazard Identification Number	Not applicable.				
ADR/RID Additional information	Not classified as dangerous for conveyance in the meaning of the regulations for the transport of dangerous goods by road and rail.				

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ICAO/IATA	None.	Not regulated.	Not regulated	None	
<b>ICAO/IATA Additional information</b>	None.				
IMDG	None.	Not regulated.	Not regulated	None	
<b>IMDG Additional information</b>	None.				

**14.5 Environmental hazards** : Although this product does not meet the criteria for an environmentally hazardous mixture, according to the IMDG Code, this product does contain substances toxic for the environment. Harmful to aquatic life with long lasting effects. This product contains marine pollutants. See ECOLOGICAL INFORMATION, Section 12.

**14.6 Special precautions for user**

- : Avoid and control operations which create dust. Avoid release to the environment. Appropriate advice on safety must accompany the package.

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

- : This information is not available.



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### SECTION 15. REGULATORY INFORMATION

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- : Classification according to Regulation (EC) No. 1272/2008 on the classification of hazardous substances and mixtures.

##### *Restrictions on use*

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use, as amended:

Restricted to professional users.

See Item 28. cadmium (CAS # 7440-43-9)

See Item 30. Lead (CAS # 7439-92-1)

Lead (CAS # 7439-92-1). See Item 63.

cadmium (CAS # 7440-43-9). See Item 23.

##### *Authorisations*

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended:

cadmium (CAS # 7440-43-9)

##### *Directive 2012/18/EU (Seveso III) on the control of major-accident hazards involving dangerous substances:*

None of the components are specifically listed.

##### *Directive 98/24/EC on the protection of the health and safety of workers from risks related to chemical agents at work:*

Flue dust, zinc-refining (CAS # 69012-63-1)

Zinc oxide (CAS # 1314-13-2)

Laurionite (CAS # 15860-78-3)

Matlockite (CAS # 14639-92-0)

Cadmium oxide (CAS # 1306-19-0)

Manganese oxide (CAS # 1344-43-0)

##### *Directive 94/33/EC on the protection of young people at work:*

Flue dust, zinc-refining (CAS # 69012-63-1)

Laurionite (CAS # 15860-78-3)

Matlockite (CAS # 14639-92-0)

Cadmium oxide (CAS # 1306-19-0)

Manganese oxide (CAS # 1344-43-0)

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006, as amended [including Regulation (EU) 2015/830].

Follow national regulation for work with chemical agents.

German legislation on substances that are hazardous to water AwSV: Water hazard class (Germany) - 3 (self classified)

#### 15.2 Chemical safety assessment

- : A Chemical Safety Assessment has been carried out for this substance. Refer to the Chemical Safety Report (CSR) for Flue dust, zinc-refining, 2012, for detailed information on the results of the Chemical Safety Assessment.

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### SECTION 16. OTHER INFORMATION

**Legend** : ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road  
CAS: Chemical Abstract Services  
EC: European Community  
EC50: Effective Concentration 50%  
ECHA: European Chemicals Agency  
EN: European Standard  
EU: European Union  
HSDB: Hazardous Substances Data Bank  
IATA: International Air Transport Association  
IBC: Intermediate Bulk Container  
ICAO: International Civil Aviation Organisation  
IMDG: International Maritime Dangerous Goods  
Inh: Inhalation  
LC: Lethal Concentration  
LD: Lethal Dose  
NOEC: No observable effect concentration  
OECD: Organisation for Economic Co-operation and Development  
OEL: National occupational exposure limits  
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail  
RTECS: Registry of Toxic Effects of Chemical Substances  
SDS: Safety Data Sheet  
STEL: Short Term Exposure Limit  
TWA: Time Weighted Average  
WEL: Workplace Exposure Limit

**Information Source** : 1. Material Safety Data Sheet from manufacturer.  
2. Canadian Centre for Occupational Health and Safety, CCIInfoWeb Databases, 2018 (Chempendium, RTECS, HSDB, INCHEM).  
3. European Chemicals Agency, Classification Legislation, 2018.  
4. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2018.

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**Revision Information**

: (M)SDS sections updated:  
2. HAZARDS IDENTIFICATION;  
3. COMPOSITION/INFORMATION ON INGREDIENTS;  
4. FIRST AID MEASURES;  
8. EXPOSURE CONTROLS / PERSONAL PROTECTION;  
11. TOXICOLOGICAL INFORMATION;  
12. ECOLOGICAL INFORMATION;  
15. REGULATORY INFORMATION

**H-Phrases (Full text)** : Not applicable.

**Other special considerations for handling**

: Provide adequate information, instruction and training for operators.

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<p><b>Prepared by:</b> ICC The Compliance Center Inc. <a href="http://www.thecompliancecenter.com">http://www.thecompliancecenter.com</a></p>	 <p>icc ComplianceCenter</p>

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