

International

**SAFETY DEPARTMENT
1020 WEST PARK AVENUE
KOKOMO, INDIANA 46904-9013
INFORMATION: 317-456-6625**

HAYNES INTERNATIONAL, INC.

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|-----------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| MSDS IDENTIFICATION NUMBER <h3>Air Melt Slag</h3> | PREVIOUS REVISION DATE N/A | HMIS Health 1 Flammability 0 Reactivity 1 | EMERGENCY PHONE NUMBERS HAYNES: 765-456-6894 CHEMTREC: 800-424-9300 (24-hour contact for Health & Transportation Emergencies) |
| | DATE ISSUED 05/15/99 | | |

This Material Safety Data Sheet (MSDS) provides information on a specific group of manufactured metal products. Since these metal products share a common physical nature and constituents, the data presented are applicable to all alloys identified. This document was prepared to meet the requirements of OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and the Superfund Amendments and Reauthorization Act of 1986 Public Law 99-949.

EMERGENCY OVERVIEW

Danger. Contact with dust causes severe irritation and burns to every area of body contact. Slag dust which contains calcium oxide is irritating and reacts exothermically to form corrosive calcium hydroxide when in contact with moist body surfaces or with water. Serious burns or sight loss may result if treatment is not immediate.

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1. SUBSTANCE IDENTIFICATION

SUBSTANCE NAME: Slag

Description: Recovered metal

General Use: Used as an aggregate

2. COMPOSITION/INGREDIENT INFORMATION

| | CAS No. | % by weight | Exposure Limit 8-Hour TWA (mg/m ³) | | |
|-------------------------------------------------------|------------|-------------|------------------------------------------------|----------------------|--------------------------|
| | | | OSHA PEL | ACGIH TLV | Other (MAK) ³ |
| Calcium Oxide (CaO) | 1305-78-8 | 20-55 | 5 | 2 | |
| Aluminum Oxide (Al ₂ O ₃)* | 1344-28-1 | 20-50 | 15 ¹ ,5 ² | 10 | |
| Magnesium Oxide (MgO) | 1309-48-4 | 8-20 | 15 | 10 | |
| Silicon Dioxide (SiO ₂) | 60676-86-0 | 1-12 | Note ⁴ | 0.1 ² | |
| Chromium Oxide (Cr ₂ O ₃) | 1308-38-9 | 0-11 | 0.5 | 0.5 | |
| Titanium Dioxide (TiO ₂) | 13463-67-7 | 0-2 | 15 | 10 | |
| Niobium Oxide (Nb ₂ O ₅) | 1313-96-8 | 0-1 | Not Est ⁵ | Not Est ⁵ | |
| Iron Oxide (Fe ₂ O ₃) | 1309-37-1 | 0-1 | 10 | 5 | |
| Manganic Oxide (Mn ₂ O ₃) | 1317-34-6 | 0-1 | 5 C | 0.2 | |
| Manganous Oxide (MnO) | 1317-35-7 | 0-1 | 5 C | 0.2 | |
| Nickel Oxide (NiO) | 1314-06-3 | 0-1 | 1 | 0.2 ² | |
| Sulfur Trioxide (SO ₃) | 7449-11-9 | 0-0.5 | Not Est ⁵ | Not Est ⁵ | |
| Zirconium Dioxide (ZrO ₂) | 1314-23-4 | 0-0.5 | 5 | 5 | |
| Phosphorus Pentoxide (P ₂ O ₅) | 1314-56-3 | 0-0.1 | - | - | 1 C |

2. COMPOSITION/INGREDIENT INFORMATION (CONTINUED)

* Reportable ingredients per section 313 of SARA. See section 15 for additional information.

1 Total dust. (All limits are total dust, unless indicated otherwise)

2 Respirable dust.

3 Federal Republic of Germany; Maximum Concentration Values in the Workplace.

4 See OSHA quartz formula.

5 Not Established: Many substances do not have a unique exposure limit. The absence of an exposure limit does not lessen consideration for exposure risk. In the absence of specific information, professional judgement may be required.

C - Ceiling Limit

3. HAZARDS INFORMATION

POTENTIAL HEALTH EFFECTS: Dust and powder form of slag is irritating and corrosive to moist skin, eyes, and mucous membranes of the digestive and respiratory tracts. Aluminum, magnesium, other metal oxides and irritants. Corrosive effects are due to the formation of alkaline calcium hydroxide when it contacts water or moisture. Slag, as a solid item, is less hazardous.

INHALATION: Acute exposure to dust levels above exposure limits (Section 2) may cause inflammation and irritation of the respiratory system with coughing or difficulty breathing.

EYE CONTACT: Contact with dust produces severe irritation and burns with potential permanent eye damage.

SKIN CONTACT: Skin contact causes itching and if skin is moist. Symptoms include a slippery, soapy feeling, burning, and possible tissue damage.

INGESTION: Ingestion causes immediate, intense burning in the mouth, throat and stomach, throat swelling, vomiting, stomach cramps, diarrhea and risk of stomach perforation.

CHRONIC: Repeated inhalation of small amounts can cause perforation of the nasal septum (tissue between the nostrils). Repeated skin contact can cause dermatitis, brittleness and cracking of the nails.

4. FIRST AID MEASURES

INHALATION

Remove exposed person to fresh air; restore and/or support his or her breathing as needed. Get medical help.

EYE CONTACT

Do not allow the victim to rub or keep eyes tightly shut. Immediate treatment is necessary; if only one eye is contaminated but first aid is not immediate, the other eye may be lost as well even though the slag has not contacted it. Gently lift the eyelids and flush immediately and continuously with copious amounts of water for at least 15 minutes or until the person(s) is transported to an emergency medical facility. Consult an ophthalmologist immediately.

SKIN CONTACT

Quickly remove contaminated clothing. Rinse with flooding amounts of water until slippery-soapy feeling disappears (may take over an hour). Wash affected skin with soap and water. Remove contaminated clothing and launder before wearing again.

INGESTION

Never give anything by mouth to an unconscious person. Consult with a physician or medically trained personnel at a poison control center. Unless the poison control center advises otherwise, have that conscious and alert person drink 1 to 2 glasses of water or milk to dilute. Do not induce vomiting.

After first aid, get appropriate in-plant, paramedic, or community medical support.

5. FIRE-FIGHTING MEASURES

FLASHPOINT: None identified FLAMMABLE LIMITS: None identified.

AUTOIGNITION TEMPERATURE: None identified

HAZARDOUS COMBUSTION PRODUCTS: None identified

EXTINGUISHING MEDIA: This material is noncombustible. Use extinguishing agents that will put out the surrounding fire.

FIRE-FIGHTING INSTRUCTIONS: Fire fighters should wear normal protective equipment (full bunker gear) and a self-contained breathing apparatus (SCBA) with full facepiece operated in positive-pressure mode.

6. STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

In solid form, this material poses no special clean-up problems. If this material is in powder or dust form, notify safety personnel of spills or leaks. Cleanup personnel need protection against eye contact and dust inhalation. Use a high efficiency (HEPA filtered) vacuum for cleanup so that airborne dust does not exceed the PEL. Do not blow with compressed air which could cause a dusting problem. Follow applicable OSHA regulations (29 CFR 1910.120).

7.0 HANDLING AND STORAGE

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| HANDLING PRECAUTIONS | No special precautions for this material as a solid substance. Store the dust form of this material (such as created by handling or crushing the slag) in a closed container and handle to prevent dusting or any material leaks. Practice good personal hygiene after using this material, especially before eating, drinking, smoking or applying cosmetics. |
| STORAGE PRECAUTIONS | Store slag in a cool, dry, well ventilated area away from incompatibles (Section 10). |

8.0 EXPOSURE CONTROLS/PERSONAL PROTECTION

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| ENGINEERING CONTROLS | The use of local exhaust ventilation may be necessary to control airborne levels of dust/fume emissions near the source (during crushing, grinding, etc.) below the exposure limits cited in Section 2. |
| RESPIRATORY PROTECTION | When engineering controls are not sufficient to reduce exposure, seek professional advice prior to respirator selection and use. When respiratory protection is required, follow OSHA respirator regulations (29 CFR 1910.134) and wear a NIOSH-approved respirator for dust. |
| SKIN PROTECTION | Wear impervious gloves, protective clothing, aprons, etc., as required by the work environment to prevent prolonged or repeated skin contact. |
| EYE PROTECTION | Wear protective eyeglasses or chemical safety goggles, when exposed to dust or flying particulate, as required by OSHA regulations (29 CFR 1910.133). |

9. PHYSICAL AND CHEMICAL PROPERTIES

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|------------------------------------------|------------------------------------------------|
| MELTING POINT: 2550-3300°F (1400-1815°C) | SPECIFIC GRAVITY (H ₂ O=1): 3.4-4.0 |
| BOILING POINT: 5100-6500°F (2815-3593°C) | pH = 11.0-11.4 |
| VAPOR PRESSURE (at 20°C): Not Applicable | ODOR: None |
| % VOLATILES BY VOLUME: 0 | APPEARANCE: Grey and/or green |
| VAPOR DENSITY: Not Applicable | PHYSICAL STATE: Solid |
| SOLUBILITY IN WATER = Slight | |

10. STABILITY AND REACTIVITY

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|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GENERAL: | This product as a solid article is stable at room temperature under normal storage and handling conditions. |
| CONDITIONS TO AVOID: | Not applicable. |
| CHEMICAL INCOMPATIBILITIES: | This material reacts with interhalogens such as chlorine trifluoride (ClF ₃), boron trifluoride, fluorine, and hydrofluoric acid, also reacts with perchlorates, nitrates and permanganates. |
| HAZARDOUS DECOMPOSITION PRODUCTS: | None identified. |
| HAZARDOUS POLYMERIZATION: | Does not occur. |

| 15. REGULATORY INFORMATION (CONTINUED) | |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U.S. FEDERAL REGULATIONS | SARA HAZARD CATEGORY: Listed below are the hazard categories for Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III): |
| | Immediate Hazard: X Delayed Hazard: - Fire Hazard: - Pressure Hazard: - Reactivity Hazard: - |
| | Chemicals subject to the reporting requirements of Section 313 or title III of SARA and 40 CFR Part 372: Aluminum oxide (only as a fibrous material). |
| STATE REGULATIONS | California's "Safe Drinking Water and Toxic Enforcement Act of 1986" (Proposition 65) Materials known to cause cancer or reproductive toxicity: Nickel. |

| 16. OTHER INFORMATION | |
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| MSDS STATUS: Original Issue | |
| <p>The above information has been prepared by IT Corporation under contract with Haynes International and is a compilation of information from various sources believed to be accurate. As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any material described herein. Information contained herein is believed to be true and accurate, but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable Federal, State, and local laws and regulations remain the responsibility of the user.</p> | |