



Safety Data Sheet

1. PRODUCT IDENTIFICATION AND USE:

Product name: Iron Rich Material (IRM)

Chemical Name & Synonyms: IRM, Iron Residue, Alstone Material, Ecotite

Material Identification and Use: This material is byproduct of a Waelz Kiln and is primarily a black or brown or gray aggregate used as a raw material for the production of Portland Cement, low grade steel and Asphalt.

Supplier: Charah Soutlions, Inc.
Address: 12601 Plantside Drive
Louisville, KY 40299

Telephone: 877-314-7724
Fax: 502-245-7398

Note: This SDS covers products from different sources. The concentration of constituents will have minor variances

2. HAZARDS IDENTIFICATION:

Chemical Nature: As shipped, this product does not pose any health hazard because the density and moisture content reduces the ability for particulate matter to become airborne. If dried and made airborne non-hazardous dust may be created which may irritate unprotected eyes.

Hazardous Components: Not Applicable: Primarily composed of ferrosilicate material & metal oxides with other metals substituting for iron in the magnetite structure.

3. COMPOSITION AND INFORMATION ON INGREDIENTS:

COMPONENT NAME	Chemical Formula	%	CAS No.
Iron Compounds	Fe**	35 - 45%	7439-89-6 **
Silicon Dioxide	SiO ₂ (total)	6 - 10%	7631-86-9
Calcium Oxide	CaO	10 - 12%	1305-78-8
Magnesium Oxide	MgO	5 - 8%	1309-48-4
Manganese Compounds	TiO**	3 - 5%	7439-96-5 **
Zinc Compounds	Zn**	0.5 - 1 %	7440-66-6 **

** CAS No. for reduced metal; material contains this metal in various compounds.

4. FIRST AID MEASURES:

Eye Contact:	Flush the eye(s) with lukewarm water until the particles have been removed. If irritation persists, obtain medical attention. May cause irritation due to presence of "foreign object". Calcium oxide is caustic to living tissue, especially when moist, so contact may cause burns or damage to the cornea.
Skin Contact:	Wash with soap and water. Possible skin irritation or dry skin.
Inhalation:	Acute exposure: Remove to fresh air. If not breathing, give artificial respiration Administer oxygen if breathing is difficult. Get medical attention. EFFECTS OF ACUTE EXPOSURE: Exposure may cause irritation to nose, throat and lungs, and may cause damage to mucous membranes. Without protective equipment, acute or rapidly developing silicosis may occur within a short period of time in heavy exposure occupations. Silicosis is a form of disabling pulmonary fibrosis, which can be progressive and may lead to death. EFFECTS OF CHONIC EXPOSURE: Exposure may cause irritation to nose, throat and lungs, and may cause damage to mucous membranes.
Ingestion:	May cause irritation and damage to mucous membranes. Rare in industry - Seek medical attention.

5. FIRE FIGHTING MEASURES:

This material is inert, non-flammable and non-combustible

6. ACCIDENTIAL RELEASE MEASURES:

Leaks and Spills:	Minimize contact with skin and avoid breathing dust. Wear gloves, long sleeves and long pants. Material is usually slightly moist and granular which minimizes potential for dust generation Ventilate area of leak or spill. Wear appropriate personal protective equipment. Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. Dispose in accordance with ederal, state or local regulations.
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7. HANDLING AND STORAGE:

Storage Requirements:	No special storage procedures required Minimize dust generation when handling Material has passed TCLP prior to shipment and can be stockpiled
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8. EXPOSURE CONTROLS / PERSONAL PROTECTIVE EQUIPMENT:



- Eye Protection:** Safety goggles or glasses, as required by nature of task(s) being performed. Contact Lenses may concentrate irritants.
- Skin Protection:** As required by nature of work being done such as long sleeve shirts and long pants.
- Ventilation:** Material is generally damp but be sure to use adequate ventilation and dust collection should the material dry out and become airborne in an enclosed space.
- Respiratory Protection:** Where applicable, respirators should be fitted, maintained, and cleaned in accordance with the regulations.
- Other Preventative Equipment or Practices:** As required by nature of work being done. In an enclosed space: minimize dust generation and avoid breathing dust. Practice good housekeeping using vacuum or wet methods to clean up dust. Practice good personal hygiene by washing hands and face promptly after handling and before eating drinking or smoking.

9. PHYSICAL AND CHEMICAL PROPERTIES:

- Appearance:** Solid Angular Aggregate (Black / Brown / Gray)
- Odor:** No Appreciable Odor
- Solubility in Water:** Insoluble in Water
- pH:** Not Available
- Auto-Ignition Temperature** Not Applicable
- Melting Point:** 1150 C
- Vapor Pressure:** Not Applicable
- Specific Gravity:** 2.1 – 4.2
- Percent Volatiles:** Not Applicable
- Evaporation Rate:** Not Applicable

10. STABILITY AND REACTIVITY:

- Product Stability:** Stable
- Hazardous Polymerization:** Will Not Occur
- Conditions to Avoid :** Avoid Breathing of Dust, use approved respirators against ordinary dust. Goggles are recommended. May cause eye irritation.

May be oxidate (rust) iron and steel in the presence of moisture.

No adverse health effects have been noted after acute exposure to this substance. The substance may cause eye and respiratory tract irritation if overexposed. Dust of silica, and iron all contribute to pulmonary disorders. Chronic exposure to silica caused siderosis and silicosis, respectively. Symptoms include coughing, sneezing, dyspepsia and repeated non-specific chest illnesses.

11. TOXICOLOGICAL INFORMATION:

OCCUPATIONAL EXPOSURE LIMITS:

The following Threshold Limit Values (TLV's) refer to airborne concentrations of substances.

OSHA-PEL TWA MATERIAL	ACGIH-TLV STEL FORM	TWA mg/M ³	STEL mg/M ³	mg/M ³	mg/M ³
IRON	--	--	--	--	--
ALUMINUM (DUST)		15	--	10	--
SILICON DIOXIDE	10	--	10	--	--
CALCIUM OXIDE	5	--	2	--	--
MAGNESIUM OXIDE		10	--	10	--
MANGANESE (COMPOUNDS)		--	--	5	--
ZINC OXIDE (DUST)		10	--	10	--
NUISANCE DUST	15	--	10	--	--

ROUTES OF ENTRY: Inhalation.

CARCINOGENIC ASSESSMENT:

NTP? No

IARC MONOGRAPH? No

OSHA? No

This material is nontoxic and has not been identified as a suspect or known carcinogen by NTP, LARC or OSHA>Toxicological Data.

No LD50/LC50 information found relating to normal routes of occupational exposure for the material as a whole.

OCCUPATIONAL EXPOSURE LIMITS FOR COMPONENTS:

Calcium oxide CAS: 1305-78-8

Limit value - Eight hours: 2 mg/m³

Magnesium oxide CAS: 1309-48-4

Limit value - Eight hours: 10 mg/m³ inhalable aerosol, 4 mg/m³ Respirable aerosol

Amorphous Silica CAS: 7361-86-9

OSHA PEL 0.1 mg/m³ Respirable Dust
ACGIH TLV 0.1 mg/m³ Respirable Dust

The above Threshold Limit Values (TLV's) refer to airborne concentrations of substances. The potential hazard of solid particles depends on particle size, which is expressed in three forms:

Inhalable (< 100 μm) – when deposited anywhere in the respiratory tract

Thoracic (< 25 μm) – when deposited anywhere within the lung airways and the gas-exchange region

Respirable (< 10 μm) – when deposited in the gas-exchange region

OSHA PEL – Permissible Exposure Limit (mg/m³)
ACGIH TWA – Time Weighted Average (mg/m³)

12. ECOLOGICAL INFORMATION:

Ecotoxicity:	Low toxicity: This product has been applied to groundwater sources as part of an effort to <u>reduce</u> contaminants.
Persistence and degradability:	Not applicable.
Bioaccumulative potential:	Not known.
Mobility in soil:	Iron Rich Material is a complex inorganic substance. It mainly contains iron and calcium silicates. Traces of metals exist in metal form, mineral form or included in silicate phases. Full TCLP testing was completed prior to shipment of the substance and demonstrated that the trace metals are firmly built in and bonded into the glass/crystal structures of the silicate and other mineral phases. This resulted in limited release and low measured water-solubility of the trace metals present in the matrix. Contains metals which may be leached out by water if in contact with acidic water (low pH) in low scale.
Results of PBT and vPvB assessment:	Does not meet requirements for PBT and vPvB substances.

13. DISPOSAL CONSIDERATIONS:

Waste Disposal Information:	Reclaim material where possible. Dispose of in accordance with all state, provincial, local and federal legislation
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14. TRANSPORT INFORMATION:

No special precautions are required. This product is not classified as dangerous for conveyance.

15. REGULATORY INFORMATION:

This product is not required to carry a hazard warning label under the Chemicals (Hazard Information and Packaging) Regulations (CHIP2) 1994

Approved code of practice:	Classification and labelling of substances and preparations dangerous for supply. Safety data sheets for substances and preparations.
Guidance notes:	Workplace Exposure Limits EH40
EU Regulation:	Release of more than 100 kg/year to air, 50 kg/year to water or 50 kg/year to land is to be reported, EC 166/2006.

16. OTHER INFORMATION:

This SDS was prepared from information provided by raw materials suppliers to Charah Solutions, Inc.

Date drawn up:	August 2007
Date of latest revision:	June 2016
Version number:	007
Contact:	Product Manager Business Development Manager

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