

Material Safety Data Sheet

Material Name: Iron Silicate

MSDS ID: M-001



U.S. MINERALS

Section 1 - IDENTIFICATION

Material Name:

Iron Silicate

Trade Name:

Black Diamond

Recommended Use

Abrasives, Roofing Granules and other aggregate uses.

Restrictions on Use

None known.

Manufacturer Information

US Minerals, Inc.
2105 North Winds Drive
Dyer, IN 46311

Phone: (219) 864-0909
Fax: 219-864-4675
Emergency # (800) 803-2803; (800) 424-9300 (ChemTrec)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with 29 CFR 1910.1200

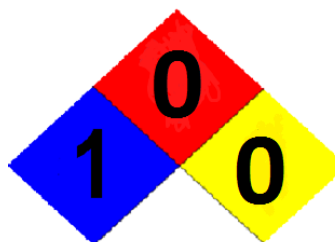
- Acute Toxicity (Oral), Category 4 (47% unknown)
- Skin Corrosion / Irritation, Category 3
- Eye Damage / Irritation, Category 2A
- Carcinogenicity, Category 2
- Specific Target Organ Toxicity - Single Exposure, Category 2 (respiratory system)
- Specific Target Organ Toxicity - Single Exposure, Category 2 (digestive system and/or systemic toxicity)
- Specific Target Organ Toxicity - Repeated Exposure, Category 2 (respiratory system, lungs)

GHS LABEL ELEMENTS

Symbol(s)



NFPA Label



Signal Word

WARNING

Hazard Statement(s)

- Harmful if swallowed.
- Can cause skin irritation.
- May cause damage to respiratory system, lungs through prolonged or repeated exposure.

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Precautionary Statement(s)

Prevention

Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

Response

IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth

Storage

Store locked up. Store in a secure, controlled area

Disposal

Dispose in accordance with all applicable regulations.

* * *Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

CAS	Component	Percent
1309-37-1	Iron oxide (Fe ₂ O ₃)	45-55
7631-86-9	Silicon Dioxide	30-45
1305-78-8	Calcium oxide	0-7
1344-28-1	Aluminum oxide	0-5
7440-66-6	Zinc	0-2
7440-50-8	Copper	0-0.631

Others

Evidence may exist to indicate that components present in this material in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees in those concentrations.

Employee exposure monitoring should be performed to determine exposure levels.

* * *Section 4 - FIRST AID MEASURES* * *

Description of Necessary Measures

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

If adverse effects occur, wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse. Wash work clothes separately from other household clothing.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

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Ingestion

If swallowed, get immediate medical attention. Rinse mouth.

Most Important Symptoms/Effects

Acute

Respiratory tract irritation, skin irritation, eye irritation.

Delayed

Respiratory system damage, lung damage.

* * *Section 5 - FIRE FIGHTING MEASURES* * *

Suitable Extinguishing Media

Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Chemical

Negligible fire hazard.

Hazardous Combustion Products

Combustion: oxides of zinc

Fire Fighting Measures

Use extinguishing agents appropriate for surrounding fire. Stay upwind and keep out of low areas. Avoid inhalation of material or combustion by-products.

Special Protective Equipment and Precautions for Firefighters

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

* * *Section 6 - ACCIDENTAL RELEASE MEASURES* * *

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8. Avoid release to the environment.

Methods and Materials for Containment and Cleaning Up

Collect spilled material in appropriate container for disposal. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). If sweeping of a contaminated area is necessary, use a dust suppressant agent. Move containers away from spill to a safe area. Wet down area with water.

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Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Wash thoroughly after handling. Do not breathe dust. Do not eat, drink or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

Conditions for Safe Storage, including any Incompatibilities

Store and handle in accordance with all current regulations and standards. Protect from physical damage.

Section 8 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid	Appearance:	black shiny solid
Color:	Black	Physical Form:	Solid
Odor:	No characteristic odor	Odor Threshold:	Not available
pH:	Not available	Melting Point:	Not available
Boiling Point:	Not applicable	Flash Point:	Non-flammable; non-explosive
Decomposition:	Not available	Evaporation Rate:	Not available
OSHA Flammability Class:	Non - Flammable	LEL:	Not available
UEL:	Not available	Vapor Pressure:	Not applicable
Vapor Density (air = 1):	Not applicable	Density:	Not available
Specific Gravity (water = 1):	Not available	Water Solubility:	Marginal
Log KOW:	Not available	Coeff. Water/Oil Dist:	Not available
Viscosity:	Not available		

Other Property Information

No additional information is available.

Section 9 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Avoid accumulation of airborne dusts.

Incompatible Materials

none

Hazardous Decomposition

Combustion: miscellaneous decomposition products.

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Section 10 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Iron oxide (Fe₂O₃) (1309-37-1)

ACGIH: 5 mg/m³ TWA (respirable fraction)

NIOSH: 5 mg/m³ TWA (as Fe, dust and fume)

2500 mg/m³ IDLH (as Fe, dust and fume)

OSHA (US): 10 mg/m³ TWA (fume); 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

Mexico: 5 mg/m³ TWA LMPE-PPT

10 mg/m³ STEL [LMPE-CT] (as Fe)

Silicon Dioxide (7631-86-9)

NIOSH: 6 mg/m³ TWA

3000 mg/m³ IDLH

OSHA (US): 20 mppcf TWA; (80)/(% SiO₂) mg/m³ TWA

Calcium oxide (1305-78-8)

ACGIH: 2 mg/m³ TWA

NIOSH: 2 mg/m³ TWA

25 mg/m³ IDLH

OSHA (US): 5 mg/m³ TWA

Mexico: 2 mg/m³ TWA LMPE-PPT

Aluminum oxide (1344-28-1)

OSHA (US): 15 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable fraction)

Mexico: 10 mg/m³ TWA LMPE-PPT

Copper (7440-50-8)

ACGIH: 0.2 mg/m³ TWA (fume)

NIOSH: 1 mg/m³ TWA (dust and mist); 0.1 mg/m³ TWA (fume)

100 mg/m³ IDLH (dust, fume and mist)

OSHA (US): 0.1 mg/m³ TWA (fume); 1 mg/m³ TWA (dust and mist)

Mexico: 0.2 mg/m³ TWA LMPE-PPT (as Cu, fume); 1 mg/m³ TWA LMPE-PPT (as Cu, dust and mist)

2 mg/m³ STEL [LMPE-CT] (as Cu, fume); 2 mg/m³ STEL [LMPE-CT] (as Cu, dust and mist)

Appropriate Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).

Individual Protection Measures, such as Personal Protective Equipment

Eyes/Face Protection

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate chemical resistant clothing.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

Where dust or vapor concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator is required.

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* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following endpoints are published:

Iron oxide (Fe₂O₃) (1309-37-1)

Oral LD50 Rat >10000 mg/kg

Silicon Dioxide (7631-86-9)

Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

Calcium oxide (1305-78-8)

Oral LD50 Rat 500 mg/kg

Aluminum oxide (1344-28-1)

Oral LD50 Rat >5000 mg/kg

Acute Toxicity Level

Copper (7440-50-8)

Toxic: Ingestion

Information on Likely Routes of Exposure

Inhalation

Throat irritation, difficulty breathing.

Ingestion

Diarrhea, stomach pain, difficulty breathing

Skin Contact

Skin irritant

Eye Contact

Eye irritant

Immediate Effects

Eye and Skin Irritant, Shortness of Breath

Delayed Effects

Respiratory system damage

Medical Conditions Aggravated by Exposure

respiratory disorders, eye disorders, skin disorders

Irritation/Corrosivity Data

respiratory tract irritant, skin irritant, eye irritant,

Local Effects

Calcium oxide (1305-78-8)

Corrosive: inhalation, skin, eye, ingestion

Zinc (7440-66-6)

Irritant: inhalation, skin, eye

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Carcinogenicity

Available data characterizes components of this product as possible carcinogen hazards.

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Component Carcinogenicity

Iron oxide (Fe₂O₃) (1309-37-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Supplement 7 [1987]; Monograph 1 [1972] (Group 3 (not classifiable))

DFG: Category 3B (could be carcinogenic for man, with the exception of non-bioavailable ferrous oxides)

Silicon Dioxide (7631-86-9)

IARC: Monograph 68 [1997]; Supplement 7 [1987] (Group 3 (not classifiable))

Mutagenic Data

No data available.

Reproductive Effects Data

No data available.

Tumorigenic Data

No data available.

Specific Target Organ Toxicity - Single Exposure

respiratory system, digestive system

Specific Target Organ Toxicity - Repeated Exposure

respiratory system, lungs

Aspiration Hazard

No data available.

* * *Section 12 - ECOLOGICAL INFORMATION* * *

Ecotoxicity

Component Analysis - Aquatic Toxicity

Silicon Dioxide (7631-86-9)

Fish: 96 Hr LC50 Brachydanio rerio: 5000 mg/L [static]

Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 440 mg/L

Invertebrate: 48 Hr EC50 Ceriodaphnia dubia: 7600 mg/L

Calcium oxide (1305-78-8)

Fish: 96 Hr LC50 Cyprinus carpio: 1070 mg/L [static]

Zinc (7440-66-6)

Fish: 96 Hr LC50 Pimephales promelas: 2.16 - 3.05 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 0.211 - 0.269 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas: 2.66 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 30 mg/L; 96 Hr LC50 Cyprinus carpio: 0.45 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 7.8 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 3.5 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 0.24 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.59 mg/L [semi-static]; 96 Hr LC50 Oncorhynchus mykiss: 0.41 mg/L [static]

Algae: 96 Hr EC50 Pseudokirchneriella subcapitata: 0.11 - 0.271 mg/L [static]; 72 Hr EC50 Pseudokirchneriella subcapitata: 0.09 - 0.125 mg/L [static]

Invertebrate: 48 Hr EC50 Daphnia magna: 0.139 - 0.908 mg/L [Static]

Copper (7440-50-8)

Fish: 96 Hr LC50 Pimephales promelas: 0.0068 - 0.0156 mg/L; 96 Hr LC50 Pimephales promelas: <0.3 mg/L [static]; 96 Hr LC50 Pimephales promelas: 0.2 mg/L [flow-through]; 96 Hr LC50 Oncorhynchus mykiss: 0.052 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 1.25 mg/L [static]; 96 Hr LC50 Cyprinus carpio: 0.3 mg/L [semi-static]; 96 Hr LC50 Cyprinus carpio: 0.8 mg/L [static]; 96 Hr LC50 Poecilia reticulata: 0.112 mg/L [flow-through]

Algae: 72 Hr EC50 Pseudokirchneriella subcapitata: 0.0426 - 0.0535 mg/L [static]; 96 Hr EC50 Pseudokirchneriella subcapitata: 0.031 - 0.054 mg/L [static]

Invertebrate: 48 Hr EC50 Daphnia magna: 0.03 mg/L [Static]

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Persistence and Degradability

No information available for the product.

Bioaccumulative Potential

No information available for the product.

Mobility

No information available for the product.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

Section 14 - TRANSPORT INFORMATION

US DOT Information

Shipping Name: Not Regulated

IMDG Information

Shipping Name: Not Regulated

Section 15 - REGULATORY INFORMATION

Component Analysis

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Aluminum oxide (1344-28-1)

SARA 313: 1.0 % de minimis concentration (fibrous forms)

Zinc (7440-66-6)

SARA 313: 1.0 % de minimis concentration (dust or fume only)

CERCLA: 454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

Copper (7440-50-8)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)

SARA 311/312 Hazardous Categories

Acute Health: Yes Chronic Health: Yes Fire: No Pressure: No Reactive: No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Iron oxide (Fe ₂ O ₃)	1309-37-1	Yes	Yes	Yes	Yes	Yes
Silicon Dioxide	7631-86-9	Yes	Yes	Yes	Yes	Yes
Calcium oxide	1305-78-8	Yes	Yes	Yes	Yes	Yes
Aluminum oxide	1344-28-1	Yes	Yes	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	No	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes

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Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
Iron oxide (Fe ₂ O ₃)	1309-37-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
Silicon Dioxide	7631-86-9	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
Calcium oxide	1305-78-8	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
Aluminum oxide	1344-28-1	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes
Zinc	7440-66-6	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
Copper	7440-50-8	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe



Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

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End of Sheet M-001