

## SAFETY DATA SHEET

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### 1. SUBSTANCE AND SOURCE IDENTIFICATION

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**Product Identifier**

**SRM Number:** 693  
**SRM Name:** Iron Ore (Nimba)  
**Other Means of Identification:** Not applicable.

**Recommended Use of This Material and Restrictions of Use**

This Standard Reference Material (SRM) is intended primarily for use in checking chemical methods of analysis and in calibration with instrumental methods of analysis. A unit of SRM 693 consists of one bottle containing approximately 100 g of powder with < 74  $\mu\text{m}$  (200 mesh) particle sizes.

**Company Information**

National Institute of Standards and Technology  
Standard Reference Materials Program  
100 Bureau Drive, Stop 2300  
Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200  
E-mail: SRMMSDS@nist.gov  
Website: <https://www.nist.gov/srm>

Emergency Telephone ChemTrec:  
1-800-424-9300 (North America)  
+1-703-527-3887 (International)

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### 2. HAZARDS IDENTIFICATION

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**Classification**

**Physical Hazard:** Not classified.  
**Health Hazard:** Not classified.

**Label Elements****Symbol**

No symbol

**Signal Word**

No signal word.

**Hazard Statement(s)**

Not applicable.

**Precautionary Statement(s)**

Not applicable.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients(s) with Unknown Acute Toxicity:** Not applicable.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** Iron ore

**Other Designations:**

Iron oxide, red (Hematite; ferric oxide, red; iron oxide; crocus; diiron trioxide;  $\text{Fe}_2\text{O}_3$ )  
Silicon dioxide (silica, amorphous)  
Aluminum oxide (alundum, alumina, dialuminum trioxide; aluminum sesquioxide; alpha-alumina;  $\text{Al}_2\text{O}_3$ )

Components are listed in compliance with OSHA's 29 CFR 1910.1200. The material contains trace amounts of other oxide components; for the actual values see the Certificate of Analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Nimba, powder	n/a	n/a	100
<b>Individual Components</b>			
Iron oxide, red	1309-37-1	215-168-2	≥93.1
Silicon dioxide	7631-89-9	231-545-4	3.9
Aluminum oxide	1344-28-1	215-691-6	1.0
Non-Hazardous Material (other trace oxide materials)	n/a	n/a	≤2

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#### 4. FIRST AID MEASURES

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##### Description of First Aid Measures:

**Inhalation:** If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

**Skin Contact:** Wash skin with soap and water.

**Eye Contact:** Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

**Ingestion:** If adverse effects occur after ingestion, seek medical treatment.

**Most Important Symptoms/Effects, Acute and Delayed:** May cause eye, skin and respiratory irritation.

**Indication of any immediate medical attention and special treatment needed, if necessary:** If any of the above symptoms are present, seek medical attention if needed.

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#### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Negligible fire hazard. Avoid generating dust. See Section 9, "Physical and Chemical Properties" for flammability properties.

##### Extinguishing Media:

Suitable: Regular dry chemical, carbon dioxide, water, regular foam.

Unsuitable: None listed.

**Specific Hazards Arising from the Chemical:** None listed.

**Special Protective Equipment and Precautions for Fire-Fighters:** Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

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#### 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures:** Any accumulated material on surfaces should be removed and properly disposed of. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

**Methods and Materials for Containment and Clean up:** Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

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#### 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** Minimize dust generation and accumulation on surfaces. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. See Section 8, "Exposure Controls and Personal Protection". Avoid contact with incompatible materials (see Section 10 "Stability and Reactivity").

**Storage:** Store and handling in accordance with all current regulations and standards.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits			
Components	OSHA (PEL)	ACGIH (TLV)	NIOSH (REL)
Iron oxide, red	TWA: 15 mg/m <sup>3</sup> (total dust) TWA: 5 mg/m <sup>3</sup> (respirable fraction) TWA: 10 mg/m <sup>3</sup> (fume)	TWA: 5 mg/m <sup>3</sup> (respirable fraction)	TWA: 5 mg/m <sup>3</sup> (Fe dust and fume) IDLH: 2500 mg/m <sup>3</sup> (Fe dust and fume)
Silicon dioxide	TWA: 20 mppcf TWA: (80/(% SiO <sub>2</sub> )) mg/m <sup>3</sup>	TWA: 6 mg/m <sup>3</sup> IDLH: 3000 mg/m <sup>3</sup>	No occupational exposure limits established.
Aluminum oxide	TWA: 15 mg/m <sup>3</sup> (total dust) TWA: 5 mg/m <sup>3</sup> (respirable fraction)	TWA: 1 mg/m <sup>3</sup> (respirable fraction, related to Aluminum insoluble compounds)	No occupational exposure limits established.

**Engineering Controls:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Personal Protection:** In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

**Respiratory Protection:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye/Face Protection:** Wear splash resistant safety goggles with a face shield. An eye wash station should be readily available near areas of use.

**Skin and Body Protection:** Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Descriptive Properties:

<b>Appearance (physical state, color, etc.)</b>	not available
<b>Molecular Formula</b>	not applicable
<b>Molar Mass (g/mol)</b>	not applicable
<b>Odor</b>	not available
<b>Odor threshold</b>	not available
<b>pH</b>	not available
<b>Evaporation rate</b>	not available
<b>Melting point/freezing point</b>	not available
<b>Density:</b>	not available
<b>Vapor Pressure</b>	not available
<b>Vapor Density (air = 1)</b>	not available
<b>Viscosity (cP)</b>	not available
<b>Solubility(ies)</b>	not available
<b>Partition coefficient (n-octanol/water)</b>	not available
<b>Particle Size</b>	<100 µm

### Thermal Stability Properties

<b>Autoignition Temperature</b>	not available
<b>Thermal Decomposition</b>	not available
<b>Initial boiling point and boiling range</b>	not available
<b>Explosive Limits, LEL (Volume %)</b>	not available
<b>Explosive Limits, UEL (Volume %)</b>	not available
<b>Flash Point</b>	not available
<b>Flammability (solid, gas)</b>	not available

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Stable at normal temperatures and pressure.

**Stability:**  Stable  Unstable

**Possible Hazardous Reactions:** None listed.

**Conditions to Avoid:** Avoid generating dust. Avoid heat, flames, sparks, and other sources of ignitions. Avoid contact with incompatible materials.

**Incompatible Materials:** Metals, metal carbide, oxidizing materials, reducing agents and peroxides.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Thermal decomposition will produce miscellaneous compounds.

**Hazardous Polymerization:**  Will Occur  Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Exposure:**  Inhalation  Skin  Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** May cause irritation.

### Potential Health Effects (Acute, Chronic, and Delayed)

**Inhalation:** Irritation.

**Skin Contact:** May cause mechanical irritation.

**Eye Contact:** May cause irritation or eye damage.

**Ingestion:** May cause irritation.

### Numerical Measures of Toxicity

**Acute toxicity:** Not classified.

Iron oxide red: Rat, Oral LD50: >10 000 mg/kg

**Skin corrosion/irritation:** No data available.

**Serious eye damage/eye irritation:** No data available.

**Respiratory sensitization:** No data available.

**Skin sensitization:** No data available.

**Germ Cell Mutagenicity:** No data available.

**Carcinogenicity:** Not classified

**Listed as a Carcinogen/Potential Carcinogen**  Yes  No

Iron oxide, silicon dioxide (amorphous), and aluminum dioxide not listed by OSHA, IARC or NTP as carcinogens/potential carcinogens.

Iron oxide red: Tumorigenic data: Rat, Subcutaneous, TClO: 135 mg/kg

Iron oxide red: Mutagenic data: Human, 4 µg/disk (4 h)

**Reproductive Toxicity:** No data available.

**Specific Target Organ Toxicity, Single Exposure:** No data available.

**Specific Target Organ Toxicity, Repeated Exposure:** No data available.

**Aspiration hazard:** Not applicable.

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity Data:** No data available.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose of waste in accordance with all applicable federal, state, and local regulations.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** Not regulated by DOT or IATA.

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## 15. REGULATORY INFORMATION

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### U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No
CHRONIC HEALTH:	Yes
FIRE:	No
REACTIVE:	No
PRESSURE:	No

### State Regulations:

California Proposition 65: Not listed.

**U.S. TSCA Inventory:** Iron oxide, red is listed.

**TSCA 12(b), Export Notification:** Not listed.

**Canadian Regulations:** WHMIS Information is not provided for this material.

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## 16. OTHER INFORMATION

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**Issue Date:** 12 January 2023

**Sources:** ChemADVISOR, Inc., MSDS, *Ferric Oxide Red*, 21 March 2014.  
ChemADVISOR, Inc., MSDS, *Silicon Dioxide*, 09 December 2015.  
ChemADVISOR, Inc., MSDS, *Aluminum Oxide*, 21 March 2014.

### Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NRC	Nuclear Regulatory Commission
ALI	Annual Limit on Intake	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration, 50 %	STEL	Short Term Exposure Limit
LD50	Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average
NIST	National Institute of Standards and Technology	UEL	Upper Explosive Limit
		WHMIS	Workplace Hazardous Materials Information System

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