School Material Safety Data Sheet

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IRON (III) OXIDE
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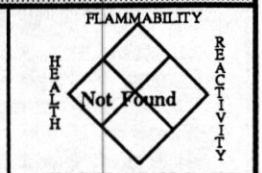
SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: IRON (III) OXIDE; Fe_2O_3
SYNONYMS: Ferric Oxide, Iron Sesquioxide, Red Iron Oxide, Jeweler's Rouge, Hematite (Mineral Ore Form).
CAS NUMBER: 1309-37-1 (1317-60-8 for "Hematite Underground Mining")
INGREDIENTS: Iron (III) Oxide, >99%
DOT CLASSIFICATION: Not listed in Hazardous Materials Tables
MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.



NFPA FIRE HAZARD SYMBOL
(See Glossary for details)

DESCRIPTION: A reddish brown-to-black powder (color depends on particle size, shape, and amount of combined water). Iron oxide is odorless.
PRELIMINARY INFORMATION: This material has a possible carcinogenic nature, which may be related only to its combination with radioactive materials and/or its mining operations (see sect. 4). High levels or prolonged exposure to the dust may have adverse health effects. This material is not combustible. Most common area of use would be in the chemistry lab.

SECTION 2. USE AND STORAGE INFORMATION

-- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- **Always provide for safe disposal of all chemical waste generated in the lab.** Check applicable regulations prior to use.
- Provide adequate ventilation.

-- USAGE PRECAUTIONS AND PROCEDURES --

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials and accumulation of dust.
- **For safety, contact lenses should not be worn in the laboratory; soft lenses may absorb irritants and all lenses may concentrate them. Particles can also adhere to contact lenses and cause corneal damage.**
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- No smoking in storage or use area.
- Avoid creating airborne dust conditions.
- Launder contaminated clothing before reuse.
- Avoid inhalation of dust and fumes.
- Prevent eye contact. Do not ingest.

-- ADDITIONAL INFORMATION --

- Iron Oxide does not polymerize. This material is stable at room temperature under normal conditions.
- Incompatible with calcium hypochlorite, hydrazine, performic acid, bromine pentafluoride.

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Smoking should not be permitted in areas where chemicals are stored.
- Store with compatible materials on sturdy shelving, away from incompatibles.
- Do not store chemicals alphabetically by name.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:
- Ventilate area of spill.
- Cleanup personnel should wear personal protective equipment as necessary to prevent eye contact and inhalation of dust.
- Carefully scoop up spilled material and collect in a suitable container (with secure lid) for disposal or reclamation.
- Avoid creating airborne dust conditions.
- Cleanup methods such as vacuuming (with appropriate filter) or wet mopping will minimize dust dispersion.

DISPOSAL OF SMALL QUANTITIES:
- Contact your supplier or a licensed disposal contractor for specific treatment/disposal procedures.
- Reclaim where possible. Unsalvageable waste may be buried in a sealed container in an approved landfill, regulations permitting.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company. .

FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL

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SECTION 4: HEALTH HAZARDS

Current OSHA PEL: 8-hr. TWA: 10 mg/m^3 for iron oxide fume
Current ACGIH TLV: 8-hr TWA: 5 mg/m^3 as iron oxide fume
* These are current values for iron oxide fume. Limits are not given for iron oxide dust.
- Iron (III) oxide can enter the body through inhalation or ingestion.

- Effects of Overexposure: Acute: Excessive dust levels may produce nonspecific irritation of the eyes and respiratory tract. Chronic: Prolonged inhalation (6 to 10 years) of iron oxide dust and fumes is known to produce X-ray changes in the lungs. This condition, known as siderosis, appears to be a benign pneumoconiosis and is not associated with pulmonary fibrosis or disability unless there is concurrent exposure to other fibrosis-producing materials such as silica. The TLV is set to guard against siderosis.

- Carcinogenic Assessment: The IARC classified iron oxide as a suspected human carcinogen (IARC 29, 1972). However, exposures in the exposed groups were generally mixed and included exposure to radioactive material. Studies of animals do not confirm the carcinogenicity of iron oxide. It is not classified as a known or suspected carcinogen by OSHA. The NTP lists "Hematite, underground mining" (CAS #1317-60-8) as a carcinogen in its Third Annual Report on Carcinogens (Ref. 82)

SECTION 5: FIRST AID PROCEDURES

Eye contact:
- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get medical attention if irritation persists.*

Skin contact:
- Wash exposed areas of skin with soap and water.
  Get medical attention if irritation persists.*

Inhalation:
- Remove victim to fresh air. Seek medical attention if irritation or discomfort persists.*

Ingestion:
- Get prompt medical attention.*
- Give several glasses of water to drink. Induce vomiting -- but ONLY if victim is conscious and alert.
- Never give anything by mouth to a person who is unconscious or convulsing.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- Iron (III) oxide is not combustible.

- Extinguishing media: Use media appropriate to surrounding fire conditions.

- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.

- A water spray may be used to cool fire-exposed containers and disperse vapors.

FLASH POINT AND METHOD(S) ... Not Combustible

AUTOIGNITION TEMPERATURE ... Not Combustible

FLAMMABILITY LIMITS IN AIR (vol. %): Does not apply

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm) ... Decomposes
VAPOR PRESSURE (@ 20°C, mm Hg) ... Negligible
SOLUBILITY IN WATER (@ 20°C) ... Insoluble (Soluble in Acids)
SPECIFIC GRAVITY ... 5.24
MELTING POINT ... 2849°F (1565°C)
FORMULA WEIGHT ... 159.7

DATA SOURCES: **Genium's Industrial MSDS #175 (2/86) and references** 2, 4, 5, 7, 9, 12, 14, 27, 43, 55, 58, 82, 84, 501, 506, 509, 511.
(see glossary for titles)

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Approvals: Author J. Banta

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