



HS FURNACE SLAG

Material Safety Data Sheet

Arkema Inc.

1 PRODUCT AND COMPANY IDENTIFICATION

Acrylic Monomers

Arkema Inc.
2000 Market Street
Philadelphia, PA 19103

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 767-5089 (24Hrs)

Information Telephone Numbers	Phone Number	Available Hrs
Customer Service	800-338-1015	8:00 to 6:00 EST

Product Name HS FURNACE SLAG
Product Synonym(s)

Chemical Family MIXTURE
Chemical Formula MIXTURE
Chemical Name MIXTURE
EPA Reg Num
Product Use

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical %	OSHA
Copper oxide	1317-39-1	1.3-1.6	Y
Manganese oxide	1344-43-0	2.3-3.1%	Y
Sodium hydroxide	1310-73-2	13-14%	Y
Sodium sulfate	7757-82-6	82.21-82.25%	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are all on the TSCA Inventory list.

3 HAZARDS IDENTIFICATION

Emergency Overview

Odorless

DANGER!

CONTAINS MANGANESE WHICH CAUSES LIVER AND BRAIN DAMAGE UPON PROLONGED OR REPEATED EXPOSURE

CAUSES RESPIRATORY TRACT IRRITATION.

CAUSES SEVERE EYE BURNS. MAY CAUSE BLINDNESS.

CAUSES SEVERE SKIN BURNS.

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on its composition, it is anticipated to be corrosive to eyes and skin and severely irritating to the respiratory tract. If swallowed, this material may cause mild to severe burns to the mouth, throat and digestive tract. Long-term



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overexposure to insoluble manganese compounds may cause weight loss, muscle pain, liver damage and brain damage with symptoms such as sleeping difficulties, decreased sex drive and headaches progressing to decreased ability to perform skilled movements, speaking difficulties, emotional outbreaks, irritability, hallucinations and Parkinsonian-like tremors and facial tics. Repeated or prolonged exposure to manganese dusts may greatly increase the susceptibility of an individual to lung infections. Individuals with Wilson's Disease may be more susceptible to copper exposure and may suffer liver damage and anemia. Medical conditions which may be aggravated by exposure to this material include lung disease or limited respiratory capacity.

4 FIRST AID MEASURES

IN CASE OF CONTACT, immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	NE	
Flash Point	N/E	Flash Point Method
Flammable Limits- Upper	NE	
Lower	NE	

Extinguishing Media

Use water spray, carbon dioxide, foam or dry chemical.

Fire Fighting Instructions

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

Material does not support combustion.

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Contain spill. Stop leak at source if this can be done safely. Ventilate area. Nonessential personnel should leave the area until cleanup is completed. Pump liquid into DOT-approved drums for disposal. Absorb remaining liquid onto inert absorbent and place in DOT approved drums for disposal. Wash area with water. Keep concentrate and wash water from entering sewers or waterways. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

6 ACCIDENTAL RELEASE MEASURES

7 HANDLING AND STORAGE

Handling

Keep container tightly closed. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing vapor. Wash thoroughly after handling.

Storage

This material is not hazardous under normal storage conditions; however, material should be stored in closed containers, in a secure area to prevent container damage and subsequent spillage.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposures. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Eye / Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment immediately available.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing promptly and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Airborne Exposure Guidelines for Ingredients

Exposure Limit		Value
Sodium hydroxide		
ACGIH CEILING	-	2 mg/m3
OSHA TWA PEL	-	2 mg/m3
Manganese oxide		
ACGIH TWA	-Inorg. manganese cmpd, as Mn	0.2 mg/m3



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Manganese oxide

OSHA Ceiling PEL -Inorg. manganese compd, as Mn 5 mg/m3

Copper oxide

ACGIH TWA -as fume 0.2 mg/m3

ACGIH TWA -as dusts and mists 1 mg/m3

OSHA TWA PEL -as fume 0.1 mg/m3

OSHA TWA PEL -as dusts and mists 1 mg/m3

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

-WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Odorless
pH	NE
Specific Gravity	NE
Vapor Pressure	NE
Vapor Density	NE
Melting Point	>1800 F
Freezing Point	NE
Boiling Point	NE
Solubility In Water	Non-soluble

10 STABILITY AND REACTIVITY

Stability

This material is chemically stable under normal and anticipated storage and handling conditions.

Hazardous Polymerization

Does not occur.

Incompatibility

None known.

Hazardous Decomposition Products

None known.

11 TOXICOLOGICAL INFORMATION

Toxicological Information

Data on this material and/or its components are summarized below.

Manganese & Manganese Compounds

Single exposure (acute) studies indicate that this material is slightly toxic if swallowed (rat LD50 2,330-2,580 mg/kg).

11 TOXICOLOGICAL INFORMATION

7439965 Soluble Manganese Compounds tox text - DO NOT USE!!! USE 1297 INSTEAD!!!

Copper and Copper Compounds

There is a large amount of humans toxicity data from occupational exposure to refining operations where workers were exposed to dust and fume containing copper oxide, metallic copper, copper sulfate and copper sulfides. The primary effects from inhalation exposure to humans are eye and upper respiratory tract irritation. Nausea and occasional diarrhea have also been reported. A greenish skin discoloration may occur from dermal contact. Although there have been some reports of contact dermatitis in human studies with copper metals, industrial exposure has rarely resulted in allergic reactions or dermatitis. Early signs of accidental human poisonings are gastrointestinal pain, nausea and vomiting. Fatal poisonings are due to vascular injury and hemolytic anemia, which cause severe kidney and liver damage. Individuals with Wilson's Disease, a genetic defect in copper transport, may be particularly susceptible to copper exposure. Liver damage and anemia have been observed in these individuals.

Repeated administration to animals has been reported to affect the gastrointestinal tract, lower hemoglobin and hematocrit values and cause kidney and liver damage. Developmental abnormalities have been observed in several animal species given a diet high in copper. Copper metal implants have been used as contraceptive devices that interfere with egg implantation, but no reproductive effects have been observed in animal studies with soluble copper compounds. No evidence of carcinogenicity has been reported in studies of human populations or in animal models exposed by oral, inhalation or dermal routes. Generally, no genetic changes were observed in tests using bacteria, but were observed in tests using animal cells or animals.

Sodium Hydroxide

Single exposure (acute) studies indicate that this material is slightly toxic if absorbed through the skin (rat LD50 1,350 mg/kg; dry sodium hydroxide) and corrosive to rabbit eyes and skin.

Many publications in the scientific literature confirm that this material is corrosive to all tissues. Repeated inhalation resulted in lung damage in rats. No tumors were seen in long-term animal studies. No genetic changes were observed in tests using bacteria.

No significant increases in mortality in relation to duration or intensity of exposures were reported in an epidemiologic study of a small group of workers exposed to caustic dust for 30 years or more. Massive ingestion of this material has been implicated as causing esophageal cancer. Squamous cell carcinomas of the esophagus occurred approximately 12-42 years later in individuals who survived accidental childhood ingestion and are likely due to the tissue destruction and possible scarring of the esophagus rather than a direct effect of this material.

Sodium Sulfate

Single exposure (acute) studies indicate that this material is practically non-toxic if swallowed (mouse LD50 5,989 mg/kg). Inhalation studies generally indicate that acute exposure to aerosols causes no significant respiratory tract irritation in animals. Sulfate aerosols with MMAD < 0.1 μ m and concentrations up to 1 mg/cu m for 10 minutes did not alter lung function of normal or asthmatic adults. Larger size aerosols (MMAD of 0.5 μ m) affected lung function (expiratory flow rate) in some of the asthmatics. No skin damage (as measured by changes in electrical impedance) following a 30-minute exposure to washing solution (1.2 g/l).

No skin allergy was observed in humans following repeated exposure. Long-term administration in the diet along with a known carcinogenic azo dye enhanced tumor production in rats by the carcinogen. This material alone was not carcinogenic. No birth defects were observed in the offspring of mice exposed orally during pregnancy.

12 ECOLOGICAL INFORMATION

12 ECOLOGICAL INFORMATION**Ecotoxicological Information**

Data on this material and/or its components are summarized below.

Copper and Copper Compounds

This material is highly toxic to striped bass (96-hr LC50 250-500 ug/l), snails (96-hr LC50 60-390 ug/l) and mosquito fish (48-hr LC50 0.18 mg/l). It is moderately toxic to brine shrimp (48-hr LC50 3.2 mg/l).

Sodium Hydroxide

Data from several species of fish showed a range of tolerance (brook trout > spotfin and Lake Emerald shiners > minnows > mosquitofish > goldfish) that was most likely related to changes in the pH produced by addition of sodium hydroxide to the water. The minimum lethal concentration for minnows, Mayfly larvae and Daphnia was 100 ppm and for Chironomus larvae, 700 ppm.

Sodium Sulfate

This material is practically non-toxic opossum shrimp (48-hr LC50 11,300 ppm), Daphnia magna (48-hr TLM 2,564 ppm), worms (96-hr LC50 7,700 ppm), plankton (96-hr LC50 2,000 ppm), mollusc (96-hr LC50 8,250 ppm), mollie fish (48-hr TLM 15,996 mg/l), sheepshead minnow (48-hr LC50 >18,000 ppm), and mosquito fish (48-hr LC50 150 mg/l). The sublethal effects in mallard ducklings following a 28-day drinking water study occurred at >1000 ppm.

Manganese and Manganese Compounds

Soluble compounds are moderately toxic to Daphnia magna (LC50 8.28 mg/l) and practically non-toxic to teleost freshwater fish (LC50 3,230 mg/l).

Copper oxide

This material is highly toxic to Daphnia magna (48-hr EC50 0.51 mg/l) and practically non-toxic to algae (96-hr EC50 65 mg/l). This material is practically non-toxic opossum shrimp (48-hr LC50 11,300 ppm), Daphnia magna (48-hr TLM 2,564 ppm), worms (96-hr LC50 7,700 ppm), plankton (96-hr LC50 2,000 ppm), mollusc (96-hr LC50 8,250 ppm), mollie fish (48-hr TLM 15,996 mg/l), sheepshead minnow (48-hr LC50 >18,000 ppm), and mosquito fish (48-hr LC50 150 mg/l). The sublethal effects in mallard ducklings following a 28-day drinking water study occurred at >1000 ppm.

Chemical Fate Information

Data on this material and/or its components are summarized below.

Sodium Hydroxide

No data were available, but this material is a strong alkali that easily dissolves in water with resulting acid/base chemistry.

13 DISPOSAL CONSIDERATIONS**Waste Disposal**

Incineration is the recommended method for disposal observing all local, state and federal regulations.



14 TRANSPORT INFORMATION

DOT Name	Corrosive liquids, n.o.s.
DOT Technical Name	(Sodium hydroxide)
DOT Hazard Class	8
UN Number	1760
DOT Packing Group	PG III
RQ	1000 LBS.

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health	Y	Fire	N
Delayed (Chronic) Health	Y	Reactive	N
		Sudden Release of Pressure	N

The components of this product are all on the TSCA Inventory list.

Ingredient Related Regulatory Information:

SARA Reportable Quantities	CERCLA RQ	SARA TPQ
Sodium hydroxide	1000 LBS	
Manganese oxide	NE	
Sodium sulfate	NE	
Copper oxide	NE	NE

SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

- Copper oxide
- Manganese oxide

Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

- Sodium hydroxide
- Sodium sulfate

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

- Copper oxide
- Manganese oxide
- Sodium hydroxide

Pennsylvania Environmental Hazard

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Environmental Hazard List.

- Sodium hydroxide
- Sodium sulfate

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

- Sodium hydroxide
- Sodium sulfate



16 OTHER INFORMATION

Revision Information

Revision Date 19 APR 2005 Revision Number 5

Supercedes Revision Dated 19-OCT-2004

Revision Summary

Revised section 8.

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

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