

Safety Data Sheet

Section 1

Identification of the Substance and of the Supplier

1.1 Product Identifier

Product Identifier:	Fly Ash
Other Means of Identification:	Class C Fly Ash Class F Fly Ash Ponded Fly Ash Landfill Fly Ash Economizer Ash
Formula:	UVCB Substance

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advice Against

Relevant Identified Uses:	Component of wallboard, concrete, roofing material, bricks
Uses Advised Against:	None known

1.3 Details of the Supplier of the SDS

Manufacturer/Supplier:	Mineral Resource Technologies, Inc.
Street Address:	10100 Katy Freeway, Suite 300
City, State and Zip Code:	Houston, TX 77043
Customer Service Telephone:	1-800-992-3639

1.4 Emergency Telephone Number

Emergency Phone Number:	CHEMTREC 1-800-424-9300 CCN802916
Hours Available:	24 Hours

Section 2 Hazards Identification


2.1 Classification of the Substance

GHS Classification(s) according to OSHA Hazard Communication Standard (29 CFR 1910.1200):

STOT-SE Category 3
Eye Irritant Category 2A
STOT-RE Category 2.

Note: The level of respirable crystalline silica (RCS) present in this product has not been determined; however, a conservative classification for STOT-RE, Category 2 has been assigned.

2.2 Label Elements

<i>Labeling according to 29 CFR 1910.1200 Appendices A, B and C*</i>	
Hazard Pictogram(s):	
Signal word:	Danger
Hazard Statement(s):	Causes serious eye irritation. May cause respiratory irritation. May cause damage to lungs after repeated/prolonged exposure via inhalation.
Precautionary Statement(s):	Do not breathe dust. Wash thoroughly after handling. Wear eye protection. Use outdoors or in a well-ventilated area. If inhaled: Remove to fresh air and keep comfortable for breathing Get medical advice/attention if you feel unwell 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. Store in a secure area. Dispose of product in accordance with local/national regulations.

** Fly ash and other coal combustion products (CCPs) are UVCB substances (substance of unknown or variable composition or biological). Various CCPs, noted as Ashes; Ash; Ash residues; Ashes, residues,*

bottom; Bottom ash; Bottom ash residues; Waste solids, ashes under TSCA are defined by the US EPA as: "The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium." Ashes including fly ash and fluidized bed combustion ash are identified by CAS number 68131-74-8. The exact composition of the ash is dependent on the fuel source and flue additives composed of a large number of constituents. The classification of the final substance is dependent on the presence of specific identified oxides as well as other trace elements.

2.3 Other Hazards

Listed Carcinogens:
-Respirable Crystalline Silica

IARC: [Yes] NTP: [Yes] OSHA: [No] Other: [No]

Section 3

Composition/Information on Ingredients

Substance	CAS No.	Percentage (%)	GHS Classification
Aluminosilicates	71243-67-9	15-24 %	Single Exposure STOT, Category 3
Amorphous Silica	60676-86-0	28-45%	
Crystalline Silica	14808-60-7	1 – 5%	Repeat Dose STOT, Category 2
Silica, crystalline respirable (RCS)	14808-60-7	See note 1	Repeat Dose STOT, Category 2
Calcium oxide	1305-78-8	Total 16 – 33%	Skin Irritant Category 2 Eye irritant Category 2B
Phosphorous pentoxide	1314-56-3	0.5- 2.6%	Skin Irritant Category 2 Eye irritant Category 2B

1. The percentage of respirable crystalline silica has not been determined.

Section 4

First Aid Measures

4.1 Description of First Aid Measures

Inhalation:	If product is inhaled and irritation of the nose or coughing occurs, remove person to fresh air. Get medical advice/attention if respiratory symptoms persist.
Skin Contact:	If skin exposure occurs, wash with soap and water.
Eye Contact:	If product gets into the eye, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Seek medical attention/advice if irritation occurs or persists.
Ingestion:	No specific first aid measures are required.

4.2 Most Important Health Effects, Both Acute and Delayed

Acute effects: Direct exposure may cause respiratory irritation, eye irritation and skin irritation. The product dust can dry and irritate the skin and cause dermatitis and can irritate eyes and skin through mechanical abrasion.

Chronic effects: Chronic exposure may cause lung damage from repeated exposure. Chronic inhalation of dusts containing respirable crystalline silica may result in silicosis.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

Seek first aid or call a doctor or Poison Control Center if contact with eyes occurs and irritation remains after rinsing.

Section 5 Firefighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media:	Product is not flammable. Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media:	Not applicable, the product is not flammable.

5.2 Special Hazards Arising From the Substance or Mixture

Hazardous Combustion Products:	None known.
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5.3 Advice for Firefighters

Special Protective Equipment and Precautions for Firefighters:	As with any fire, wear self-contained breathing apparatus (NIOSH approved or equivalent) and full protective gear.
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Section 6

Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Personal precautions/Protective Equipment:	See Section 8.3 Individual Protective Measures. For concentrations exceeding Occupational Exposure Levels (OELs), use a self-contained breathing apparatus (SCBA).
Emergency procedures:	Use scooping, water spraying/flushing/misting or ventilated vacuum cleaning systems to clean up spills. Do not use pressurized air.

6.2 Environmental precautions

Environmental precautions:	Prevent contamination of drains or waterways and dispose according to local and national regulations.
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6.3 Methods and Material for Containment and Cleaning Up

Methods and materials for containment and cleaning up:	<p>Do not use brooms or compressed air to clean surfaces. Use dust collection vacuum and extraction systems.</p> <p>Large spills of dry product should be removed by a vacuum system. Dampened material should be removed by mechanical means and recycled or disposed of according to local and national regulations.</p>
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See Sections 8 and 13 for additional information on exposure controls and disposal.

Section 7

Handling and Storage

7.1 Precautions for Safe Handling

Practice good housekeeping. Use adequate exhaust ventilation, dust collection and/or water mist to maintain airborne dust concentrations below permissible exposure limits (note: respirable crystalline silica dust may be in the air without a visible dust cloud).

Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain and test ventilation and dust collection equipment. In cases of insufficient ventilation, wear a NIOSH approved respirator for silica dust when handling or disposing dust from this product. Avoid contact with skin and eyes. Wash or vacuum clothing that has become dusty. Avoid eating, smoking, or drinking while handling the material.

7.2 Conditions for safe storage, including any incompatibilities

Minimize dust produced during loading and unloading.

Section 8
Exposure Controls/Personal Protection

8.1 Control Parameters

OCCUPATIONAL EXPOSURE LIMITS					
SUBSTANCE		OSHA PEL TWA (mg/m ³)	NIOSH REL TWA (mg/m ³)	ACGIH TLV TWA (mg/m ³)	CA - OSHA PEL (mg/m ³)
Calcium oxide		5	2	2	2
Particulates Not Otherwise Regulated	Total	15	15	-	10
	Respirable	5	5	-	5
Crystalline Silica	Total Quartz	30 ÷ (%SiO ₂ +2) (Total Quartz)	-	-	0.3
	Respirable Crystalline Silica	10 ÷ (%SiO ₂ +2)	0.05	0.025 (α-quartz & cristobalite)	0.1
	Cristobalite	-	0.05	0.025 (α-quartz & cristobalite)	0.05 (respirable)

8.2 Exposure Controls

8.2.1 Engineering Controls

Provide ventilation to maintain the ambient workplace atmosphere below the occupational exposure limit(s). Use general and local exhaust ventilation and dust collection systems as necessary to minimize exposure.

8.2.2 Personal Protective Equipment (PPE)

Respiratory protection:	Wear a NIOSH approved particulate respirator if exposure to airborne particulates is unavoidable and where occupational exposure limits may be exceeded. If airborne exposures are anticipated to exceed applicable PELs or TLVs, a self-contained breathing apparatus or airline respirator is recommended.
Eye and face protection:	If eye contact is possible, wear protective glasses with side shields. Avoid contact lenses.
Hand and skin protection:	Wear gloves and protective clothing. Wash hands with soap and water after contact with material.

Section 9
Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Property: Value	Property: Value
Appearance (physical state, color, etc.): Fine tan/gray particulate	Upper/lower flammability or explosive limits: Not applicable
Odor: Odorless	Vapor Pressure (Pa): Not applicable
Odor threshold: Not applicable	Vapor Density: Not applicable
pH (25 °C): 8 - 12	Specific gravity or relative density: 2.5 – 3.0
Melting point/freezing point (°C): Not applicable	Water Solubility: Slight
Initial boiling point and boiling range (°C): Not applicable	Partition coefficient: n-octane/water: Not determined
Flash point (°C): Not determined	Auto ignition temperature (°C): Not applicable
Evaporation rate: Not applicable	Decomposition temperature (°C): Not determined
Flammability (solid, gas): Not combustible	Viscosity: Not applicable

Section 10
Stability and Reactivity

10.1 Reactivity:	The material is an inert, inorganic material primarily composed of elemental oxides.
10.2 Chemical stability:	The material is stable under normal use conditions.
10.3 Possibility of hazardous reactions:	The material is a relatively stable, inert material; polymerization will not occur.
10.4 Conditions to avoid:	Product can become airborne in moderate winds. Dry material should be stored in silos. Materials stored out of doors should be covered or maintained in a damp condition.
10.5 Incompatible materials:	None known.

10.6 Hazardous decomposition products:

None known.

**Section 11
Toxicological Information**

11.1 Information on Toxicological Effects

Endpoint	Data
Acute oral toxicity	LD50 > 2000 mg/kg
Acute dermal toxicity	LD50 > 2000 mg/kg
Acute inhalation toxicity	LC50 > 50 mg/kg
Skin corrosion/irritation	Not irritant to skin.
Eye damage/irritation	Positive scores for conjunctiva irritation and chemosis in 2/3 animals based on average of 24, 48 and 72 hour scores with irritation clearing within 21 days; No corneal or iritis effects observed.
Respiratory/skin sensitization	Not a respiratory or dermal sensitizer
Germ cell mutagenicity	Not mutagenic in in vitro and in vivo assays with or without metabolic activation.
Carcinogenicity	Not available. Respirable crystalline silica has been identified as a carcinogen by NTP and IARC.
Reproductive toxicity	An animal study with a CCP has indicated some effects on male and female reproductive organs and parameters without a clear dose response while studies with other CCPs have not shown reproductive effects. Therefore, there is not enough evidence available to classify according to reproductive toxicity. No developmental toxicity has been observed in available animal studies.
STOT-SE	No specific target organ toxicity after a single exposure to the substance is expected; however, presence as a nuisance dust may result in respiratory irritation.
STOT-RE	NOAEC = 4.2 mg/m ³ fly ash dust; as no effects were observed at the highest dose tested during the 180 day inhalation study it is not possible to assess the level at which toxicologically significant effects may occur. Repeated inhalation exposures to high levels of respirable crystalline silica may result in lung damage (i.e. silicosis).
Aspiration hazard	Not applicable based on product form.

**Section 12
Ecological Information**

12.1 Toxicity

No data available on final product.

12.2 Persistence and Degradability

Not relevant for inorganic materials.

12.3 Bioaccumulative Potential

No data available.

12.4 Mobility in Soil

No data available.

12.5 Results of PBT and vPvB Assessment

No data available.

12.6 Other Adverse Effects

None known.

Section 13 Disposal Considerations

See Sections 7 and 8 above for safe handling and use, including appropriate hygienic practices.

Dispose of all waste product and containers in accordance with federal, state and local regulations.

Section 14 Transport Information

Regulatory entity: U.S. DOT	Shipping Name:	Not Regulated
	Hazard Class:	Not Regulated
	ID Number:	Not Regulated
	Packing Group:	Not Regulated

Section 15 Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Mixture

- TSCA Inventory Status

All components are listed on the TSCA Inventory.

- California Proposition 65

The following substances are known to the State of California to be carcinogens and/or reproductive toxicants:

- Respirable crystalline silica
 - Titanium dioxide (airborne particles)
- State Right-to-Know (RTK)

Component	CAS	MA ^{1,2}	NJ ^{3,4}	PA ⁵	RI ⁶
Barium oxide-as Barium compounds	1304-28-5; Various	No	Yes	Yes	Yes
Calcium carbonate	1317-65-3	Yes	Yes	Yes	No
Calcium oxide	1305-78-8	Yes	Yes	Yes	No
Calcium sulfate	7778-18-9	Yes	Yes	Yes	No
Iron oxide	1309-37-1	Yes	Yes	Yes	No
Magnesium oxide	1309-48-4	No	Yes	No	No
Phosphorus pentoxide (or phosphorus oxide)	1314-56-3	Yes	Yes	Yes	No
Silica-crystalline (SiO ₂), quartz	14808-60-7	Yes	Yes	Yes	No
Sodium oxide	1313-59-3	No	Yes	No	No
Sodium sulfate	7757-82-6	Yes	No	Yes	No
Titanium dioxide	13463-67-7	Yes	Yes	Yes	No

¹ Massachusetts Department of Public Health, no date

² 189th General Court of The Commonwealth of Massachusetts, no date

³ New Jersey Department of Health and Senior Services, 2010a

⁴ New Jersey Department of Health, 2010b

⁵ Pennsylvania Code, 1986

⁶ Rhode Island Department of Labor and Training, no date

- Other Environmental Listings

Section 16

Other Information, Including Date of Preparation or Last Revision

16.1 Indication of Changes

Date of preparation or last revision: 12/18/2015 and 3/10/16

Revision: 3/27/17

16.2 Abbreviations and Acronyms

- ACGIH: American Conference of Industrial Hygienists
- ANSI: American National Standards Institute
- CA: California
- CAA: Clean Air Act
- CAS: Chemical Abstract Services
- CCP: Coal Combustion Product
- CFB: Circulating Fluidized Bed
- CFR: Code of Federal Regulations
- CWA: Clean Water Act
- EPA: Environmental Protection Agency
- GHS: Globally Harmonized System of Classification and Labelling
- HMIS: Hazardous Materials Identification System
- IARC: International Agency for Research on Cancer
- LC50: Concentration resulting in the mortality of 50 % of an animal population
- LD50: Dose resulting in the mortality of 50 % of an animal population
- LEL: Lower explosive limit
- MA: Massachusetts
- NA: Not Applicable
- NJ: New Jersey
- NOEC: No observed effect concentration
- NIOSH: National Institute of Occupational Safety and Health
- NOx: Nitrogen oxides
- NTP: US National Toxicology Program
- OEL: Occupational Exposure Limit
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- Pa: Paschal
- PBT: Persistent, Toxic and Bioaccumulative
- PEL: Permissible exposure limit
- PPE: Personal Protective Equipment
- REL: Recommended exposure limit
- RI: Rhode Island
- RCS: Respirable Crystalline Silica
- RTK: Right-to-Know
- SARA: Superfund Amendments and Reauthorization Act
- SCBA: Self-contained breathing apparatus
- SDS: Safety Data Sheet

- STEL: Short-term exposure limit
- STOT-RE: Specific target organ toxicity-repeated exposure
- STOT-SE: Specific target organ toxicity-single exposure
- TLV: Threshold limit value
- TSCA: Toxic Substances Control Act
- TWA: Time-weighted average
- UEL: Upper explosive limit
- UVCB: Unknown or Variable Composition/Biological
- U.S.: United States
- U.S. DOT: United States of Department of Transportation
- vPvB: Very Persistent and Very Bioaccumulative

16.3 Other Hazards

CCP 2

Hazardous Materials Identification System (HMIS)						
Degree of hazard (0= low, 4 = extreme)						
Health:	1*	Flammability:	0	Reactivity:	1	Personal protection:

* Chronic Health Effects

DISCLAIMER:

While the information provided in this safety data sheet is believed to provide a useful summary of the hazards of Fly Ash as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product. In particular, the data furnished in this sheet do not address hazards that may be posed by other materials mixed with Fly Ash. Users should review other relevant material safety data sheets before working with this Fly Ash.

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OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records.