

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Name:

Class F Fly Ash

Product Formula:

UVCB Substance

1.2. Intended Use of the Product

Use of the substance/mixture: Industrial Use, Cement Replacement, Structural Fill

Uses advised against: None known

1.3. Name, Address, and Telephone of the Responsible Party

Charah, LLC

12601 Plantside Dr.

Louisville, Kentucky 40299

www.charah.com

(502)-245-1353

1.4. Emergency Telephone Number

Emergency Number: 800-424-9300 (24-hour response by Chemtrec)

502-245-1353 (7 am – 5 pm ET M-F)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance


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

STOT-SE Category 3

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

| Labelling according to 29 CFR 1910.1200 Appendices A, B and C* | |
|--|---|
| Hazard Pictograms: |  |
| Signal Word: | Danger |
| Hazard Statements: | May cause respiratory irritation. May cause damage to lungs after repeated/prolonged exposure via inhalation. |
| Precautionary Statements: | Do not breathe dust. 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. 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 U.S. 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.

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2.3. Other Hazards

Listed Carcinogens:

-Respirable Crystalline Silica

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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Substance Name | Product Identifier | % | Classification (GHS-U.S.) |
|---------------------------------|---------------------|-------|---|
| Aluminosilicates | (CAS No) 1327-36-2 | 50-80 | Single Exposure STOT, Category 3 |
| Crystalline Silica ¹ | (CAS No) 14808-60-7 | <35 | Repeat Dose STOT, Category 2 |
| Calcium oxide (total) | (CAS No) 1305-78-8 | <5 | Eye Damage Category 1 Skin Irritant Category 2 Single Exposure STOT, Category 3 |

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 symptoms and 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 respiratory irritation continues after removing to fresh air or if contact with eyes occurs and irritation remains after rinsing.

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SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Product is not flammable. Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire. Application of water stream to hot product may cause frothing and increase fire intensity.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

Hazardous Combustion Products: None known.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

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

Other Information: Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing dust. For concentrations exceeding Occupational Exposure Levels (OELs), use a self-contained breathing apparatus (SCBA).

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area. Use scooping, water spraying/flushing/misting or ventilated vacuum cleaning systems to clean up spills. Do not use pressurized air.

6.2. Environmental Precautions

Prevent contamination of drains or waterways and dispose according to local and national regulations.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Scoop or vacuum the product to recover it. Vacuum must be fitted with HEPA filter to prevent release of particulates during clean-up.

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely. Recover the product by vacuuming, shoveling. Do not use brooms or compressed air to clean surfaces. Contact competent authorities after a spill.

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.

See Sections 8 and 13 for additional information on exposure controls and disposal.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. 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.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep/Store away from incompatible materials. Minimize dust produced during loading and unloading.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers.

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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

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

Personal Protective Equipment:

Avoid all unnecessary exposure. Protective goggles. Chemically resistant clothing. Gloves. Face shield.



Materials for Protective Clothing:

Chemically resistant materials and fabrics.

Hand Protection:

Wear protective gloves. Wear chemically resistant protective gloves.

Eye Protection:

Chemical safety goggles and face shield.

Respiratory Protection:

Use NIOSH-approved air-purifying or supplied-air respirator where airborne concentrations are expected to exceed exposure limits. If airborne exposures are anticipated to exceed applicable PELs or TLVs, a self-contained breathing apparatus or airline respirator is recommended.

Environmental Exposure Controls:

Do not allow the product to be released into the environment.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

| Property: Value | Property: Value |
|---|---|
| Appearance (physical state, color, etc.): Solid, grey to brown | 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): 10 | Specific gravity or relative density: 2.3-2.7 |
| 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 |

9.2. **Other Information** No additional information available.

SECTION 10: STABILITY AND REACTIVITY

- 10.1. **Reactivity:** The material is an inert, inorganic material primarily composed of elemental oxides. Hazardous reactions will not occur under normal conditions.
- 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:** Strong acids. Strong bases. Strong oxidizers.
- 10.6. **Hazardous Decomposition Products:** None known.

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SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

| Endpoint | Data |
|--|---|
| Acute oral toxicity | Product data: LD50 > 2000 mg/kg Component data: Quartz: LD50>5000 mg/kg Aluminum oxide: LD50 > 15900 mg/kg (rat) Iron oxide: LD50 > 10000 mg/kg (rat) Calcium oxide: LD50 > 2000 mg/kg (rat) |
| Acute dermal toxicity | Product data: LD50 > 2000 mg/kg |
| Acute inhalation toxicity | Product data: LC50 > 5.0 mg/L Component data: Aluminum oxide: LC50 > 2.3 mg/L/4 hour |
| Skin corrosion/irritation | Not irritating to skin. |
| Eye damage/irritation | Slight but reversible eye irritation. |
| 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. |
| Specific Target Organ Toxicity–Single Exposure | 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. |
| Specific Target Organ Toxicity–Repeated Exposure | 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 information available

12.2. Persistence and Degradability

No information available

12.3. Bioaccumulative Potential

No information available

12.4. Mobility in Soil

No information available

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SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: 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 US Federal Regulations

- 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

- State Right-to-Know (RTK)

| Component | CAS | MA ^{1,2} | NJ ^{3,4} | PA ⁵ | RI ⁶ |
|--|------------|-------------------|-------------------|-----------------|-----------------|
| Calcium oxide | 1305-78-8 | Yes | Yes | Yes | No |
| Iron oxide | 1309-37-1 | Yes | Yes | Yes | No |
| Magnesium oxide | 1309-48-4 | No | Yes | No | Yes |
| Silica-crystalline (SiO ₂), quartz | 14808-60-7 | 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

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SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

16.1 Indication of Changes

Date of preparation or last revision: August 28, 2015

16.2 Abbreviations and Acronyms

- ACGIH: American Conference of Industrial Hygienists
- CA: California
- CAS: Chemical Abstract Services
- CCP: Coal Combustion Product
- CFR: Code of Federal Regulations
- 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
- MA: Massachusetts
- NA: Not Applicable
- NIOSH: National Institute of Occupational Safety and Health
- NJ: New Jersey
- NOEC: No observed effect concentration
- NTP: US National Toxicology Program
- OEL: Occupational Exposure Level
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- Pa: Paschal
- PEL: Permissible exposure limit
- PPE: Personal Protective Equipment
- RCS: Respirable Crystalline Silica
- REL: Recommended exposure limit
- RI: Rhode Island
- RTK: Right-to-Know
- SCBA: Self-contained breathing apparatus
- SDS: Safety Data Sheet
- 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
- U.S.: United States
- U.S. DOT: United States of Department of Transportation
- UVCB: Unknown or Variable Composition/Biological

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16.3 Other Hazards

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

* Chronic Health Effects

DISCLAIMER:

This SDS has been prepared in accordance with the Hazard Communication Rule 29 CFR 1910.1200. Information herein is based on data considered to be accurate as of date prepared. No warranty or representation, express or implied, is made as to the accuracy or completeness of this data and safety information. No responsibility can be assumed for any damage or injury resulting from abnormal use, failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.