



# MATERIAL SAFETY DATA SHEET

For

## Coal Fly Ash

May be used to comply with OSHA's Hazard

Communication Standard 29 CFR 1910.1200

Standard must be consulted for specific requirements.



Material Solutions for Energy & Construction™

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## Section I Identity Information

**Subject:** Bituminous Coal Fly Ash  
**Trade name:** ProAsh®

**Manufacturer:**  
Separation Technologies, LLC  
1616 Roanoke Rd  
P.O. Box 549  
Daleville, VA 24083

**Telephone Number for Information:**  
888-477-6274

## SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Analysis	CAS Number	Wt. %	OSHA PEL (mg/m3)
Glassy Aluminum silicates	N/A	60 - 90%	15
Crystalline Aluminum silicates	Various	10 - 40%	15
Crystalline Silica	14808-60-7	1 - 3%	0.1
Lime (CaO)	1305-78-8	0.8 - 1.4%	5
Iron Oxides	Various	1 - 10%	10
Sulfur Trioxide (SO3)	7446-11-9	0.1 - 0.3%	--
Devolatilized Carbon Char	7440-44-0	1 - 5%	15

Note: Fly ash is a byproduct from the combustion of coal. Fly ash consists of complex combinations of amorphous (glassy) and crystalline phases. Concentrations are approximate and may vary with coal source and boiler operating conditions. Chemical analysis of fly ash also indicates the presence of trace amounts of metals such as Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg) and Selenium (Se) found to be hazardous or toxic in some chemical forms. The International Agency for Research on Cancer (IARC) has classified Crystalline Silica as a probable human carcinogen and Inorganic Arsenic as a human carcinogen.

## SECTION III PHYSICAL AND CHEMICAL CHARACTERISTICS

**Appearance and Odor:** Fine grained, gray powder. No Odor.

**Boiling Point:** NOT APPLICABLE

**Evaporation Rate:** NOT APPLICABLE

**Vapor Pressure:** NOT APPLICABLE

**Melting Point:** NOT APPLICABLE

**Vapor Density:** NOT APPLICABLE

**Solubility in water:** Insoluble

**Specific Gravity:** 2.0 to 3.0 (ASTM D854)

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### SECTION IV FIRE AND EXPLOSION HAZARD DATA

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**Flammability Limits:** NOT APPLICABLE

**Fire and Explosion Hazard:** None

**Fire Fighting Procedures:** Coal ash is the final product of combustion: therefore, unusual hazards are not expected in a fire.

**Flash Point:** NOT APPLICABLE

### SECTION V REACTIVITY DATA

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**Stability:** Stable, will not polymerize. Stable under normal conditions of storage and handling.

**Conditions to avoid:** None

**Incompatibility:** None

**Hazardous Decomposition or By-Products:** None Reported

### SECTION VI HEALTH HAZARD INFORMATION

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**Exposure Route:**

- Inhalation
- Skin Contact
- Eye Contact

**Ingestion:** No information on the short term effects from ingestion in humans available. No observed effects in mice that ingest up to 1 % coal fly ash in drinking water (Roy et. al. 1981).

**Mutations:** No information on mutagenicity in humans was found.

**Birth Defects and Effects on Reproduction:** No information on reproductive effects in humans was found.

**Other Health Effects:** Inhaled crystalline silica may cause pulmonary damage, resulting in silicosis. Silicosis is defined as a degenerative fibrotic lung disease. It has been determined that the pulmonary defense system of mice was significantly affected by coal fly ash (Aranyl and Bradof, 1981).

**Note:** The International Agency for Research on Cancer (IARC) has classified crystalline silica as a probable human carcinogen.

**Medical Conditions:** No information was reported on medical conditions that may be aggravated by exposure to coal fly ash. However, emphysema and bronchitis frequently occur in cases of silicosis (Merchant et al. 1981)

**Emergency and First Aid Procedures:**

**Inhalation:** Move person to fresh air. Clear nasal passage and discourage affected individual from sniffing. If person is not breathing, contact emergency medical services and initiate basic life support.

**Skin:** Brush away ash particles. To avoid possible irritation, wash contaminated skin immediately with soap and water. Remove any contaminated clothing and rewash skin if necessary. If skin irritation results, obtain medical attention.

**Eyes:** Immediately flush the eyes for at least 15 minutes at an eyewash station. Use an appropriate flush solution or water while holding the eyelids open. Do not rub. Seek medical attention as soon as possible.

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### SECTION VIII PRECAUTIONS FOR SAFE HANDLING AND USE

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**Personal Protection:** Employees handling fly ash should wear gloves, goggles, NIOSH respiratory protection and disposable coverlets.

**Storage and Handling:** When storing coal fly ash in ash ponds, treat surface to avoid wind erosion of ash particles. When storing coal fly ash in landfills, the ash should be wetted and covered to avoid wind erosion of ash particles. Open trucks utilized in ash disposal should be properly covered and should be wetted.

**Special Precautions and Control Measures:** Employees handling fly ash should observe proper personal hygiene, wash hands, remove coverlets before eating, smoking, applying cosmetics or using toilet facilities. Local exhaust systems should be used whenever possible. Other practices such as wetting should be utilized to control dust. Compressed air should not be used.

### SECTION IX SPILL OR LEAK PROCEDURES

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**Spills/Releases:** Fly ash should be placed in suitable containers and covered. Fly ash should be wetted where practical to control dust. Fly ash is not considered a hazardous waste under EPA's Resource Conservation and Recovery Act (RCRA). Coal fly ash may be disposed of by adding to cement mixtures, asphalt additives, and as agricultural soil modifiers (Roy et al. 1981).

### References

- Aranyl, C. and J. Bradof. 1981. Effect of Conventional and Advanced Coal Conversion By-Products on the Pulmonary System. EPA 600/1-81-038. April.
- Giere, R., Carleton, L.E., and Lumkin, G.R., Micro- and Nanochemistry of fly ash from a coal fired power plant: American Mineralogist, Vol. 88 pp 1853 – 1865, 2003.
- IARC. 1987. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. International Agency for Research on Cancer. Vol. 42. Lyon, France.
- Merchant, J.A., B.A. Boehlecke, G. Taylor (eds.) 1986. Occupational Respiratory Diseases. U.S. Department of Health and Human Services. National Institute for Occupational Safety and Health. Publication No. 86-102.
- Morris, S.C. and L.D. Hamilton. 1984. Health and Environmental Effects of Coal-Fired Electric Power Plants. Prepared for the International Congress on Environmental Impacts on Coal Fired Power Plants, Brindisi, Italy. p. 42.
- Occupational Safety and Health Administration 1995/1996. Air Contaminants - Permissible Exposure Limits. Title 29 Code of Federal Regulations 1910.1000. U.S. Department of Labor. Occupational Safety and Health Administration.
- Raabe, O.G., W.S. Tyler, J.A. Last, et al. 1982. Studies of the Chronic Inhalation of Coal Fly Ash by Rats. Ann. Occup. Hyg. 26(1-4): 189-211.
- Roy, W.R., R.G. Thiery, R.M. Schuller, J.J. Suloway. 1981. Coal Fly Ash: A Review of the Literature and Proposed Classification System with Emphasis on Environmental Impacts. Environmental Geology Notes 96. Illinois State Geological Survey. 69 p.
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