

Section 1 - Product and Company Identification

Product identifier :

Fly Ash

Other Names:

Coal Fly Ash, Bituminous Coal Fly Ash, Subbituminous Coal Fly Ash, Pulverized Fuel Ash, Artificial Pozzolan, Pozzolan ash, Coal ash, Class C Fly ash, Class F Fly ash

Recommended Use:

Industrial uses in manufacture of concrete and blended cement; supplementary cementitious material in the manufacture of Portland cement, asphalt and other construction products.

Supplier Identifier:

GNPower Mariveles Coal Plant Ltd. Company
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Emergency:

National Poison Management and Control Center (PGH)
+63 2 524 1078

Section 2 - Hazards Identification

2.1 Classification:

Eye Damage Cat. 1; H318
Skin irritation Cat. 2; H315
Specific Target Organ Toxicity, Single Exposure, Cat. 3; H335
Carcinogenicity (inhalation) Cat. 1; H350
Specific Target Organ Toxicity, Repeated Exposure (inhalation), Cat. 1; H372

2.2 Labels



2.3 Potential Health Effects

Inhalation (acute)

Breathing dust may cause nose, throat or lung irritation and choking. The described effect depends on the degree of exposure.

Inhalation (chronic)

Prolonged or repeated inhalation of respirable crystalline silica (contained in fly ash) may cause pulmonary fibrosis and silicosis; the latter of which increases the risk for tuberculosis

and some autoimmune diseases, such as scleroderma and rheumatoid arthritis.

**Eye Contact
(acute/chronic)**

May cause irritation or inflammation.

**Skin Contact
(acute/chronic)**

May cause skin irritation, dryness, and discomfort.

**Ingestion
(acute/chronic)**

No known harmful effects for small amounts; May be damaging to digestive tract for large quantities.

Others

Existing pulmonary conditions may be aggravated by exposure. Although ash is not identified as a probable human carcinogen by NTP and IARC, respirable crystalline silica is.

Section 3 – Composition / Information on Ingredients

<u>Chemical Name</u>	<u>Common name / Other identifiers</u>	<u>CAS No.</u>	<u>Wt. %</u>	<u>GHS Classification</u>
Ash	Fly ash Coal ash Fractionated coal fly ash	68131-74-8	100	Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT SE 3: H335
Analyses have shown the product to have the following elements at concentrations of 0.1% and greater:				
Calcium oxide	Lime, Quicklime	1305-78-8	3 - 10	Skin Corr. 1; H314 Eye Dam. 1; H318
Crystalline silica, Quartz	Silicon dioxide	14808-60-7	0.1 – 1.5	Carc. 1; H350 STOT RE1; H372
Magnesium carbonate	Dolomitic limestone	16389-88-1	30 - 36	Not classified
Aluminum oxide	Alpha-Alumina	1344-28-1	13 - 17	Not classified
Iron oxide	Ferric oxide	1309-37-1	5 - 7	Not classified
Magnesium oxide	Magnesium oxide	1309-48-4	0.1 - 1	Not classified
<p>Other composition information :</p> <p>Fly ash is a by-product of coal combustion and as such may contain variable trace amounts of various different elements depending on the natural source of the coal. Fly ash may contain the following trace or residual elements (<0.1%): arsenic, antimony, barium oxide, boron, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, phosphorus oxide, potassium oxide, selenium, titanium dioxide, uranium, vanadium and other metals in trace amounts.</p>				

Section 4 – First Aid Measures

4.1 Description of first aid measures:

Precautions: First aid providers should avoid direct contact with this chemical. Wear chemical protective gloves, if necessary. Take precautions to ensure your own safety before attempting rescue, (e.g. wear appropriate protective equipment).

Inhalation: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If exposed or concerned: Call a POISON CENTER or doctor.

Eye Contact: Immediately rinse eyes cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or Doctor. Take care not to rinse contaminated water into the unaffected eye or onto face.

Skin Contact: Take off immediately all contaminated clothing, shoes/boots and leather goods such as watchbands and belts. Rinse skin with water or shower.

Immediately wash thoroughly with lukewarm, gently flowing water and non-abrasive pH neutral soap. Seek medical attention for rashes, burns, irritation or dermatitis. Wash contaminated clothing before reuse.

Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention immediately or transport victim to an emergency treatment center.

Section 5 – Fire-Fighting Measures

Flashpoint and Method	None
Flammable Limits	Not combustible
Autoignition Temperature	None
Firefighting Instructions	Treat adjacent material
Firefighting Equipment	This product is not a fire hazard. Self-contained breathing apparatus is recommended to limit exposures to smoke from any combustion source
Hazardous Combustion Products	None

5.1 Extinguishing media:

Use extinguishing media appropriate to the surrounding fire conditions. Use flooding quantities of water as a spray.

Unsuitable extinguishing media: Use caution when using water. Do not get water inside closed containers; contact with water will generate heat. Water jet may cause spattering of the alkaline solution. Use caution when using CO₂; it may scatter the dry powder.

5.2 Specific hazards arising from the product:

Product is not flammable or combustible.

Bulk powder of this product may heat spontaneously when damp with water.

Reacts with water releasing heat and forming an alkaline solution.

5.3 Special protective equipment and precautions for firefighters:

As for any fire, evacuate the area and fight the fire from a safe distance. Firefighters must wear full protective equipment including self-contained breathing apparatus with chemical protection clothing when firefighters are exposed to decomposition products from this material.

Section 6 – Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

Wear adequate personal protective equipment, including an appropriate respirator as indicated in Section 8. Isolate spill area, preventing entry by unauthorized persons. Do not touch spilled material. Do not breathe dusts.

6.2 Environmental precautions:

Avoid releases to the environment and prevent material from entering sewers, natural waterways or storm water management systems.

6.3 Methods and material for containment and cleaning up:

Move containers from spill area. Avoid dust generation and prevent wind dispersal. Do not dry sweep or blow with compressed air. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labelled waste container. Small spills may be picked up with a damp mop.

6.4 Additional Information:

See Section 8 for information on selection of personal protective equipment.
See Section 13 for information on disposal of spilled product and contaminated absorbents.

Section 7 – Handling and Storage

7.1 Precautions for safe handling:

Before handling, it is important that engineering controls are operating, protective equipment requirements and personal hygiene measures are being followed. People working with this chemical should be properly trained regarding its hazards and its safe use.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dusts.

Wash hands and exposed skin thoroughly after handling. Wash with plenty of water and pH neutral soap; do not use waterless hand cleaners such as alcohol-based gels. Clean nail beds and creases between fingers. Dry hands thoroughly with a clean towel before putting on gloves.

Avoid wearing watches and rings at work; wet particulate can collect next to the skin and cause burns.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing should not be allowed out of the workplace.

Prevent eye contact: Wear protective gloves, protective clothing and eye protection or face protection.

Follow good practices for safe glove removal.

Static Hazard: Properly ground all pneumatic conveyance systems. Static discharge may result in damage to equipment and injury to workers.

7.2 Conditions for safe storage:

Store in a dry, well-ventilated area, away from incompatible materials. Keep containers closed.

Protect from moisture/humidity.

Store in a place accessible by authorized persons only.

Store away from food and animal feed.
Keep out of reach of children.

Section 8 – Exposure Control / Personal Protection

**8.1. Control Parameters Workplace Exposure Limits:
Occupational Exposure Limits: Consult local authorities for acceptable exposure limits.**

<u>Ingredient</u>	<u>ACGIH® TLV®</u>	<u>U.S. OSHA PEL</u>	<u>Ontario (Canada) TWA</u>
Fly ash	Not established	Not established	Not established
Calcium oxide	2 mg/m ³	5 mg/m ³	Refer to ACGIH® TVL®
Crystalline silica (Quartz)	0.025 mg/m ³ (respirable)	quartz (total dust): 30 mg/m ³ / (%SiO ₂ + 2) quartz (respirable): 10 mg/m ³ / (%SiO ₂ + 2)	0.1 mg/m ³ (respirable) Designated Substance
Limestone	Not available	15 mg/m ³ (total dust) 5 mg/m ³ (respirable)	Not available
Aluminum oxide	1 mg/m ³ (respirable particulate)	15 mg/m ³ (total dust) 5 mg/m ³ (respirable)	Refer to ACGIH® TVL®
Iron oxide	5 mg/m ³ (respirable particulate)	10 mg/m ³ (total particulate dust and fume)	Refer to ACGIH® TVL®
Magnesium oxide	10 mg/m ³	15 mg/m ³ (total dust)	Refer to ACGIH® TVL®

**8.2 Exposure controls:
Engineering Controls:**

Handle product in closed system or area provided with appropriate exhaust ventilation. Handle in accordance with good industrial hygiene and safety practice. Ensure regular cleaning of equipment, work area and clothing.
If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. Have equipment available for use in emergencies such as spills or fire.

**8.3 Individual Protection Measures:
Eye/Face Protection:**

Wear approved safety glasses with side-shields or chemical safety goggles. Wear a face-shield or full-face respirator when needed to prevent exposure to airborne dusts. Contact lenses should not be worn.

Skin Protection:

Wear waterproof, snug-fitting alkali-resistant gloves, boots, knee and elbow pads to prevent skin exposure. Wear protective clothing with long-sleeves and long pants. Protective clothing can be taped inside gloves and boots. Evaluate resistance under conditions of use and maintain protective clothing carefully. Contact safety supplier for specifications.

Respiratory Protection:

Approved respiratory protective equipment (RPE) is required. An approved respirator, N95 rating or higher, must be available in case of accidental releases. Consult with respirator manufacturer to determine respirator selection, use and limitations.

A respiratory protection program that meets the regulatory requirement, such as OSHA's 29 CFR 1910.134, ANSI Z88.2 or Canadian Standards Association (CSA) Standard Z94.4, must be followed whenever workplace conditions warrant a respirator's use.

Other Protection:

Have adequate washing facilities and eyewash fountain readily available in the work area for immediate emergency use.

Every attempt should be made to avoid skin and eye contact with Fly ash. Do not get powder inside boots, shoes or gloves. Do not allow wet, saturated clothing to remain against the skin. Promptly remove clothing and shoes that are dusty or wet with Fly ash mixtures. Wash clothing and shoes thoroughly before reuse.

Do not eat, drink or smoke where this material is handled, stored and processed. Wash hands thoroughly before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas.

Environmental Exposure Controls:

Emissions from ventilation or work process equipment should be monitored to ensure they comply with the requirements of environmental protection legislation.

Section 9 – Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:	
Appearance:	Solid; grey-black powder
Odour:	Odourless
Odour threshold:	Not applicable
pH:	>11 (aqueous)
Melting point/freezing point:	Not applicable
Initial boiling point and boiling range:	Not applicable
Flash point:	Not applicable
Evaporation rate:	Not applicable
Flammability:	Not flammable or combustible
Upper/lower flammability or explosive limits:	Not applicable
Vapour pressure:	Not applicable
Vapour density:	Not applicable
Relative density:	1.8 – 2.5 (water = 1)
Solubility (ies):	Low solubility in water (<5%)
Partition coefficient (n-octanol/water):	Not applicable
Auto-ignition temperature:	Not available
Decomposition temperature:	Not available
Viscosity:	Not applicable

Section 10 – Stability and Reactivity

10.1 Reactivity:

Reacts slowly with water forming hydrated compounds, releasing heat and an alkaline solution.

10.2 Chemical Stability:

Stable at normal ambient and anticipated storage and handling conditions.

10.3 Possibility of Hazardous Reactions:

Aqueous solutions are alkaline and may corrode aluminum.

10.4 Conditions to Avoid:

Avoid unintentional contact with water / moisture and with strong acids and other incompatible materials.

10.5 Incompatible Materials:

Strong acids - Incompatible with strong acids; may react vigorously.

Water - reaction generates heat.

Aluminum – Aluminum powder and other alkali earth elements will react in the presence of water liberating extremely flammable hydrogen gas. Calcium oxide is corrosive to aluminum metal.

10.6 Hazardous Decomposition Products:

In contact with water and moisture, generates corrosive calcium hydroxide.

Section 11 – Toxicological Information

11.1 Likely routes of exposure:

Eye and Skin contact, Inhalation of dust.

11.2 Acute toxicity data:

Data not available for the mixture.

Skin corrosion / irritation:

Human experience has shown Fly ash can cause skin irritation.

Mixtures containing Calcium oxide form alkaline solutions when mixed with water that are expected to be irritating or corrosive to mouth, throat and gastro-intestinal tract.

Serious eye damage / irritation:

Mixtures containing Calcium oxide form alkaline solutions when mixed with water that are expected to cause serious eye damage and possible blindness. Damage may be permanent if treatment is not immediate.

STOT (Specific Target Organ Toxicity) Single Exposure:

Breathing dusts of Fly ash is expected to cause respiratory irritation, based on information for mixtures containing Calcium oxide.

Aspiration hazard:

Data not available. This material is alkaline; if aspiration into the lungs occurs during vomiting, severe lung damage may result.

11.3 Chronic toxicity:

STOT (Specific Target Organ Toxicity) Repeated Exposure:

Prolonged and repeated breathing of dust may cause lung disease. Inflammation of the respiratory passages, atrophy of the mucous membranes in the nose and throat has been attributed to the inhalation of dust containing Calcium oxide.

Contains crystalline silica. Long-term exposure to fine airborne crystalline silica dust may cause silicosis a form of pulmonary fibrosis that can cause shortness of breath, cough and reduced lung function. Particles with diameters less than 1 micrometer are considered most hazardous.

Respiratory and / or skin sensitization:

Product may contain trace concentrations (<0.1%) of Chromate compounds that can cause an allergic skin reaction, allergic contact dermatitis, or ACD. Once sensitized, brief skin contact with very small amounts of Cr VI may result in inflammation, rash, itching or severe skin ulcers. Not known to be a respiratory sensitizer.

Germ cell mutagenicity:

Data not available.

Reproductive effects:

Data not available.

Developmental effects:

Data not available.

Effects on or via lactation:

Data not available.

Carcinogenicity:

Crystalline silica is considered a hazard by inhalation. IARC has classified crystalline silica as a Group 1 substance, carcinogenic to humans. This classification is based on the findings of laboratory animal studies (inhalation and implantation) and epidemiology studies that were considered sufficient for carcinogenicity.

Interactions with other chemicals:

Not available

Section 12 – Ecological Information**12.1 Toxicity:**

Data not available.

Contact with water forms an alkaline solution. Avoid release to the environment.

12.2 Persistence and degradability:

Not readily biodegradable

12.3 Bioaccumulative potential:

Not available

12.4 Mobility in soil:

Not available

Section 13 – Disposal Considerations**13.1 Disposal methods:**

Dispose as an inert, non-metallic mineral in accordance with applicable federal, state/provincial and local regulations.

Avoid generating dust during disposal. Avoid contact with skin and eyes. See Section 8 for personal protection measures.

Prevent material from entering sewers, drains, ditches or waterways.

Section 14 – Transport Information

Transportation is done in bulk or bag form by ship, rail and road.

UN number	None
UN proper shipping name	None
Transport hazard class	None
Packing group	None
Special precautions for user	Avoid generating and breathing dust

Section 15 – Regulatory Information

This product is not covered under Montreal Protocol, Stockholm Convention or the Rotterdam Convention.

This product is not under Chemical Control Order (CCO), Priority Chemical List (PCL) of the Department of Environment and Natural Resources.

Section 16 – Other Information

References and sources for data:

CCOHS, Cheminfo

RTECS, Registry of Toxic Effects of Chemical Substances

NIOSH, Pocket Guide to Chemical Hazards.

Methods for classification of mixtures:

USA: Haz Com Standard 29 CFR 1910.1200 (2012)

Canada: Controlled Products Regulations.

UNECE, Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Legend to abbreviations:

ACGIH – American Conference of Governmental Industrial Hygienists

GHS- Globally Harmonized System for Classification and Labeling.

OEL– Occupational exposure limit

OSHA - Occupational Safety and Health Administration

TWA – Time weighted average

TLV - Threshold Limit Value

WHMIS – Canada Workplace Hazardous Materials Information System.

Additional information:

While the information provided in this document is believed to provide a useful summary of the hazards of Fly ash, the information in this document 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. The data furnished in this document do not address hazards that may be posed by other materials when mixed with Fly ash. Users should review other relevant safety data sheets before working with this product. The information presented in the Safety Data Sheet is based on current knowledge and publications and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not be interpreted as guaranteeing any specific property of the product.

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