

Material Safety Data Sheet (MSDS) for fly ash products and furnace bottom ash

In terms of the Occupational Health and Safety Act, 1993 (Act No.85 of 1993) Regulation 1179 dated August 1995, Fly Ash (Pulverised Fuel Ash) is considered a hazardous chemical and all manufacturers and sellers of the products must provide an appropriate Material Safety Data Sheet (MSDS) to users and other potentially affected parties (e.g. Emergency Services). The categories of information to be supplied in the MSDS are also set out in the regulations (SANS 10234 and SANS/ISO 11014).

Section 1

Chemical product and company identification

Product names

Classified products:

- DuraPozz®

Specialised products:

- PlasFill®5, PlasFill®15, PlasFill®5/45, PlasFill®45/110
- SuperPozz®

Unclassified products:

- PozzFill®, PozzSand®
- Furnace bottom ash (FBA)

Physical description and use

Fly ash is a fine powder of mainly spherical, glassy particles derived from the combustion of pulverized coal in power station boilers, at temperatures of 1000 – 1200°C. Fly ash has virtually no odour.

Fly ash is supplied predominantly in bulk form as a cementitious extender for cement applications such as concrete, mortar and plaster. It is a reactive Pozzolan, which means that it forms cement-like products when in a concrete mix.

Furnace Bottom Ash, which is used as an aggregate in concrete block and brick manufacture, is similar to fly ash but has larger particles.

PlasFill® consists of superfine grey fly ash spherical particles. It is used as an inert filler in the plastics and rubber industry.

MSDS information

This MSDS was updated in December 2023.

Chemical family

Silicon and aluminium oxides: mainly in the form of aluminosilicate amorphous spheres. Also contains minor quantities of iron, calcium, sodium and magnesium oxides.

Chemical name and synonyms

Fly ash. Also known as a Pozzolan and/or Pulverised Fuel Ash (PFA)

Formulation

The basic chemical form (aluminosilicate) of the products is not altered during processing. The products are created by an air-stream classification process to select the required particle size range. Other grades are conditioned by washing.

Supplier/Manufacturer

Ash Resources
35 Westfield Road
Longmeadow Business Estate Ext 11
Edenvale
1609
South Africa

Manufacturing sites

Lethabo Plant:

Quarry Road, Viljoensdrift (next to Lethabo Power Station), Vereeniging, Free State.
Tel. +27 (0) 87 158 3110

Matla Plant:

on Eskom Matla Power Station site, R547 Kriel Road, Mpumalanga
Tel. +27 (0) 17 612 9360 or 17 612 9363

General contacts

Head office: +27 (0) 11 657 2300
Sharecall: 0860 Flyash (359274), Gauteng

Emergency contacts

Health & Safety: +27 (0) 17 612 9363 (Matla)
Health & Safety: +27 (0) 87 158 3110 (Lethabo)
Transportation/Logistics: +27 (0) 11 657 2300

Section 2

Hazards identification

Identification:

There is not a GHS (Globally Harmonised System) classification and labelling of chemicals identity.

Classification and labelling complies with SANS 10234.

Emergency overview:

Fly ash is a fine grey powder that poses little immediate hazard. A single short-term exposure to the dry powder is not likely to cause serious harm.

Most important:

The powder is alkaline when wet and may cause irritation to skin depending on the length of exposure. Contact with eyes and skin should be avoided. The dust should not be inhaled or ingested.

Effects of eye contact:

May cause immediate or delayed irritation and inflammation.

Effects resulting from skin contact:

May cause dry skin and irritation depending on the length of exposure.

Effects resulting from inhalation:

Breathing the dust may cause irritation of the throat and/or lungs depending on the degree of exposure.

Effects resulting from ingestion:

Ingesting small amounts is not known to be harmful but large quantities will irritate the digestive tract.

Other potential hazards:

Fly ash is known to contain small amounts of crystalline silica. Actions that create airborne dust should be avoided.

Carcinogenic potential:

NTP, OSHA, or IARC do not list fly ash as a carcinogen.

It may, however, contain trace amounts of substances listed as carcinogens by these organisations. Crystalline silica, a potential trace level contaminant in Portland cement, is now classified by IARC as a known human carcinogen (Group 1). NTP has characterised respirable silica as "reasonably anticipated to be [a] carcinogen".

Medical conditions, which may be aggravated by inhalation or dermal exposure:

Pre-existing upper respiratory and lung diseases.

Section 3

Composition / information on ingredients

Component name	%	CAS No.
Silicon (SiO ₂)	< 60	
- Crystalline	< 7	14808-60-7
- Amorphous	< 50	7631-86-9
Aluminium (Al ₂ O ₃)	< 35	1344-28-1
Calcium (CaO)	< 10	1305-78-8
Magnesium (MgO)	< 5	1309-48-4
Iron (Fe ₂ O ₃)	< 5	1309-37-1
Titanium (TiO ₂)	< 5	13463-67-7
Ammonia (NH ₄)	< 0,0001	7664-41-7

Note:

CAS = Chemical Abstracts Service

Exposure limits

	TWA OEL - RL	Short term OEL - RL
OHS - ACT exposure limits		
Component name	ppm or mg/m ³	ppm or mg/m ³
Crystalline Silica Quartz	--	
Respirable quartz	0,1mg/m ³	
Ammonia (NH ₃)	50 ppm or 35 mg/m ³	35 ppm
ACGIH threshold limit		
Ammonia (NH ₃)	25 ppm	35 ppm

Note:

TWA = Time-weighted average exposure

OEL-RL = Occupational Exposure Limit-Recommended Limit for Hazardous Substances

ACGIH = American Conference of Governmental Industrial Hygienists

Section 4

First aid measures

Skin contact:

Wash the affected area thoroughly with soap and water. If skin irritation or pain continues, seek medical advice. Clothing contaminated by wet fly ash, cement, concrete or mortar should be removed and washed thoroughly before reuse

Eye contact:

Flush eyes with plenty of clean water for at least 15 minutes. Seek medical advice if irritation persists

Inhalation:

Move patient to fresh air. If nose or airways become inflamed, or breathing difficulty occurs, seek medical advice immediately.

Ingestion:

Do not induce vomiting. Rinse mouth with water and give patient plenty of water to drink. If abdominal discomfort is experienced, seek medical advice

Symptoms

Skin contact: Dry skin and irritation depending on length of exposure

Eye contact: Immediate irritation and inflammation due to alkalinity

Inhalation: Breathing the dust may cause nose, throat or lung irritation depending on the degree of exposure

Ingestion: Small amounts are not known to be harmful, but large quantities will irritate the digestive tract

Section 5

Fire-fighting measures

Flashpoint: The products are not flammable

General hazard: Avoid breathing dust

Section 6

Accidental release measures

Vacuum spilled material and place in a container. Avoid measures that cause airborne dust. Avoid inhalation and skin or eye contact. Do not wash down drains.

Section 7

Handling and storage

Avoid accidental release of airborne dust. Vacuum any spilled material and wet-wipe up remains. Store dry (preferably on pallets) and keep dry.

Section 8

Exposure controls and personal protection

Skin protection

Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened Portland cement. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened Portland cement products might occur, wear impervious clothing and gloves to eliminate skin contact. Where required, wear sturdy boots that are impervious to water to eliminate foot and ankle exposure.

Do not rely on barrier creams; barrier creams should not be used in place of gloves.

Periodically wash areas contacted by dry Portland cement or by wet cement or concrete liquids with a pH neutral soap. Wash again after the task has been completed. If, at any time, skin irritation is experienced, immediately wash the affected area and seek treatment. Clothing that has become saturated with wet concrete should be removed and replaced with clean dry clothing, after washing any affected areas of skin.

Respiratory protection

Avoid actions that cause dust to become airborne. Use local and general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MHSA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation.

Ventilation

Use local exhaust or general dilution ventilation to control exposure within applicable limits.

Eye protection

Where eyes are exposed to the risk of splashes or puffs of cement, wear safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury.

Contact lenses should not be worn when working with fly ash products.

Section 9

Physical and chemical properties

Physical state	Fine powder
Form	Spherical grains (dry material)
Colour	Light to dark grey
Odour	No distinct odour
pH	11,0
Boiling point	Not applicable
Melting point	Not applicable (>1250°C)
Flashpoint	Non-volatile, n.a.
Auto ignition	Stable, n.a.
Explosive properties	Non-explosive
Specific gravity	2,0 - 2,5

Section 10

Stability and reactivity

Stability:

Stable.

No hazardous combustion decomposition products.

Conditions to avoid:

Unintentional contact with water.

Fly ash will react violently with bromine trifluoride, fluorine, hydrogen fluoride and phosphorous.

Section 11

Toxicological information

Inhalation: Will cause irritation and dehydration of mucous membranes.

Ingestion: May cause irritation of the gastrointestinal tract.

Skin contact: May cause irritation and dehydration.

Eye contact: Will cause irritation and may cause dehydration.

Chronic effects: Inhalation of microsilica dust is considered to entail minimal risk of pulmonary fibrosis (silicosis).

However, chronic obstructive lung disease is suspected following long-term exposure (years) for concentrations above recommended occupational exposure limits.

Section 12

Ecological information

The environmental effect is limited, unless large quantities are involved.

Eco-toxicity

No recognised unusual toxicity to plants or animals.

Aquatic toxicity (Fish, Daphnia and Algae)

Non-toxic in small quantities. Large quantities, especially in static water, will result in an increase in pH up to pH 12 or more. pH changes may result in death of aquatic life.

Section 13

Disposal considerations

- There are no residues from using the products
- Do not wash down drains
- The packaging can be disposed of in a municipal waste site

Section 14

Transport information

Hazardous materials description/proper shipping name fly ash (PFA) is not hazardous under National Road Traffic Act, Act 93 of 1996 regulations and SANS 10228 (The identification and classification of dangerous goods for transport).

Hazard class	Not applicable
Identification number	Not applicable
Required label text	Not applicable
Hazardous substances/ reportable quantities (RQ)	Not applicable
U.N. number	Fly ash (PFA) is not hazardous cargo in terms of the Maritime Dangerous Goods code and as such does not have a UN number.

Section 15

Regulatory information

Status under OHSA, Act 85 of 1993 Reg.1179 dated 25/08/95:

Fly ash (PFA) is considered a “hazardous chemical” under this regulation, only in so far as it provides recommended exposure limits for dust concentrations, and needs to be part of any hazard communication programme.

Section 16

Other information

Prepared by

Integrated Solutions and Innovation Centre (ISIC) on behalf of Ash Resources

Approved by

Ash Resources (Pty) Ltd

Approval date or revision date

December 2023

Other important information

Ash Resources believes the information contained in this brochure is accurate and up to date. The information is presented in good faith but Ash Resources does not assume liability for the use of the information. This information is not intended to be, and should not be construed as legal advice. Any parties using the product should review all applicable domestic laws, rules or regulations prior to use. Inexperienced product users should obtain proper training before using this product.

Seller makes no warranty, expressed or implied, concerning the product or the seller’s ability or fitness thereof for any purpose or concerning the accuracy of any information provided by Ash Resources, except that the product shall conform to contracted specifications.

It is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. Buyer’s exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer’s claim is based on contract, breach of warranty, negligence or otherwise.

In particular, the data furnished in this sheet does not address hazards that may be posed by other materials mixed with fly ash to produce pozzolanic or other cement products. Users should review other relevant Material Safety Data Sheets before working with fly ash or working on products containing fly ash.

Sharecall: 0860 FLYASH (359274)

Tel: 011 657 2300 Email: info.ashresources@afrimat.co.za

Ash Resources

Tyger Valley Office Park Building 2
Cr Old Oak Road & Willie Van Schoor Ave
Bellville, Cape Town, 7530
Tel: 021 917 8840
www.ashresources.co.za