Technical Datasheet 9.0

REACH – Safety Data Sheet for PFA/Fly Ash and FBA (including Cenospheres)

Compiling Organisation: UK Quality Ash Association*

* The UK Quality Ash Association is not a supplier of PFA and FBA, but a trade association representing the interests of the UK coal fired power station operators. This safety data sheet represents the combined knowledge/safety information available at the time of publication.

Under the REACH regulations Article 31 it is the responsibility of the supplier of a substance to provide a safety data sheet. However, it is not necessary to supply a Safety Data Sheet if the substances / preparations are supplied in the UK and not classified as dangerous. PFA and FBA are not considered especially hazardous, see 2 and 16 below.

1) Identification of substance and the company undertaking:

Product: Pulverised Fuel Ash (PFA) or Fly Ash, as it is known in many countries and Furnace Bottom Ash (FBA) produced by coal fired power station.

Company: This information will be required from the supplier or producer of the material

Address:

Telephone:

2) Hazards Identification

PFA and FBA are not considered to be especially hazardous, but should be handled in accordance with good occupational hygiene and safety practices.

3) Composition/Information on ingredients

Chemical Composition: PFA and FBA are composed of inorganic material with a small proportion of carbon particles resulting from the incomplete combustion of the parent fuel, coal. PFA is extracted from the flue gases discharged from the combustion furnace of a coal-fired power station by electrostatic and mechanical processes. FBA is extracted by an hydraulic process from the base of the furnace.

PFA is a fine grey powder with virtually no odour. FBA is a semi vitrified granular material ranging in colour from dark grey to black with virtually no odour.

Hazardous Components: PFA and FBA are not considered to have any hazardous components that will affect existing patterns of production, handling, storage and use.

4) First Aid Measures

Skin: Wash contaminated areas of the body with soap and water as soon as is reasonably practical.

Eyes: If the substance has entered the eyes then irrigate with emergency eye wash solution (if available) or clean water for up to 15 minutes. Obtain medical advice if any pain or redness persists.

Inhalation: If inhalation of the dust causes irritation of the nose or coughing remove the patient into fresh air. Keep warm and at rest. Carefully remove any excess dust from nasal passages and rinse mouth with water until clear. If symptoms persist obtain medical advice.

Ingestion: There are no known adverse affects. Wash mouth out with water and give water to drink. Do not induce vomiting.

In all cases should exposure be excessive or symptoms develop seek medical attention.

5) Fire Fighting Measures

There are no risks of fire or explosion as the product is identified as non-combustible.

6) Accidental Release Measures

Environmental Precautions: Prevent entry into drains and watercourses.

Clean up methods: Large spills of dry material should be removed by a vacuum system. Conditioned (dampened) material should be removed by mechanical means where possible and be recycled or disposed of in a licensed site.

Applying a fine water spray can reduce the potential for dust blow.

7) Handling and Storage

Avoid creating airborne dust wherever possible. Where dust is generated then engineering control measures should be considered (water sprays) to maintain the airborne dust concentration as low as is reasonably practical.

Avoid prolonged skin contact especially where the product is dampened. Wear protective clothing, for example goggles, gloves, overalls and boots. Change heavily contaminated clothing as soon as possible; launder before re-use. Good housekeeping practices as well as high standards of personal hygiene should be maintained.

The use of respiratory equipment must be strictly in accordance with the manufacturer's recommendations and any statutory requirements governing its selection and use.

Storage in dry form: Keep in containers or silos or in sealed bags.

Storage in conditioned, lagoon or with added water: When stored in stockpiles keep exposed surfaces damp and cover small stockpiles with protective sheeting.

Handling: Avoid creating airborne dust wherever possible. Where dust is generated then engineering dust control measures should be considered to maintain the airborne dust to as low as is reasonably practicable.

Transporting in dry form: Transport in sealed tankers or similar units.

Transporting in conditioned, lagoon or with added water: In open vehicles with exposed surfaces protected with sheeting.

Classification and Transport: PFA and FBA are not classified as dangerous under the Classification Packaging and Labelling of Dangerous Substances Regulations. They are not classified dangerous for road, rail, sea or air transport.

8) Exposure controls/Personal Protection

Exposure limits: Relevant UK Occupational Exposure Standards as published in HSE Guidance Notes EH40 are:

Pulverised Fuel Ash (PFA), fly ash and Furnace Bottom Ash are:

Total Inhalable dust	10 mg/m^3 8hr TWA
Respirable dust	4 mg/m^3 8hr TWA

Control Measures: Engineering control measures such as enclosing transfer chutes and pipes, should be used wherever practicable to prevent and control dust generation and exposure. Conditioning and dampening the dust can also reduce exposure.

Protective clothing: To prevent eye and skin irritation, where contact can occur, then goggles, gloves, overalls, and boots should be worn. Change heavily contaminated clothing as soon as possible and launder before reuse. Wash any contaminated underlying skin with soap and water.

Respiratory precautions: If operations are such that the airborne dust levels are likely to exceed the concentrations quoted above, then suitable respiratory protection should be worn. The highest possible dust concentration should be estimated or measured and the appropriate equipment selected. The use of respiratory equipment must be strictly in accordance with the manufacturer's instructions and the statutory requirements governing its selections and use.

9) Physical and Chemical Properties

Appearance: PFA is a fine grey powder and FBA is a semi vitrified granular material ranging in colour from dark grey to black with virtually no odour.

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Physical Properties

Odour		**Virtually none**
Particle Density (Specific Gravity)		**1.8 to 2.4**
Solubility in water:		**Less than 2%**
Bulk density:		**1.1 to 1.7 g/cm^3**
Alkalinity - pH:		**9 to 12 when damp**
Boiling point/boiling range:		**N/A**
Melting point/melting range:		**N/A**
Flash point:		**N/A**
Flammability & auto flammability:		**N/A**
Oxidising properties:		**N/A**
Vapour pressure:		**N/A**
Dielectric Constant:		**1.9 – 2.6**
EC Number	**Ash Residues**	**268-627-4**
	Cenospheres	**300-212-6**
CAS number:	**Ash (residues)**	**68131-74-8**
	Cenospheres	**93924-19-7**
ACX number:		**X1014150-5**

Basic oxide composition

Component	Average % by weight
SiO_2	45 to 51 %
Al_2O_3	27 to 32 %
Fe_2O_3	7 to 11 %
CaO	1 to 5 %
MgO	1 to 4%
K_2O	1 to 5%
Na_2O	0.8 to 1.7 %
TiO_2	0.8 to 1.1%
SO_3 *	0.3 to 1.3%
Cl	0.05 to 0.15 %

Note: * Water soluble.

The figures for SiO_2 do not refer to free silica but to silicon present as silicates of varying compositions.

10) Stability and Reactivity

PFA and FBA is predominantly an inert glassy material containing a small amount of neutral salts and some lime.

Conditions to avoid: Dry material can become airborne in moderate winds. Dry materials shall be stored in silos. Materials stored out of doors should be maintained in a damp condition.

Materials to avoid: None

Hazardous decomposition products: None

11) Toxicological Information

Eyes: Due to the reaction with moisture in the eye irritation of the conjunctiva occurs if dust remains in contact with the eye.

Skin: Dry PFA will have little effect on the skin. However, when moist it is alkaline and prolonged or repeated contact can cause abrasion and irritant dermatitis.

Ingestion: There are no known adverse effects following ingestion.

Inhalation: After 60 years of exposure experience there is no clinical evidence of a significant risk of harm to the respiratory tract or lungs.

12) Ecological Information

Mobility, persistence and degradability, bio-accumulation potential and aquatic toxicity

PFA has no known Eco Toxic effects in the existing patterns of production, handling, storage and use. Fresh materials have been shown to have some Boron Phytoxicity, but this rapidly diminishes with weathering and amelioration.

13) Disposal Considerations

PFA and FBA are classed as 'Controlled Wastes' in the UK and have no special requirements for their disposal at appropriately licensed facilities. They are included in the European Waste Catalogue (Code No. 10 01 02) but are not hazardous materials as determined by EC Hazardous Waste List (Directive 94/904/EC). They are also 'Green List' materials for transfrontier shipment.

14) Transport Information

Category under CPL regulations: Non-hazardous.

15) Regulatory Information

Chemical Safety Assessment: Being carried out

Hazard Label Data: This product is NOT classified as dangerous for supply in the UK. PFA and FBA are governed by the following legislative requirements:

EC Directives: 94/3/EC, the European Waste Catalogue

Statutory Instruments: Health and Safety at Work Act, 1974. Consumer protection Act, 1987. Environment Protection Act, 1990. Control of Substances Hazardous to Health, 1994. Waste Management – The Duty of Care. Personal Protective Equipment at Work Regulations, 1992.

Guidance notes: Occupational Exposure Limits, EN/40.

16) Other Information

HSE, Pulverised Fuel Ash, Criteria Document for an Occupational Exposure Limit, HMSO c20 11/92, ISBN 0 11 886391 6

UK REACH Competent Authority Information Leaflet 13 – REACH and SDS – May 2008

See http://www.ukqaa.org.uk for contact details and further information.