



CEMGUARD™ FLY ASH

Lifeguard of Concrete Structures.





fly ash is the hottest ‘green’ material used in construction

working for your needs. and wants

As a fast growing organization with the sole mission of fulfilling the needs and wants of the real estate, infrastructure and construction industry, JAYCEE has been offering construction material solutions since 1983.

Our offering includes quality assured construction material solutions comprising cement, fly ash (pulverized fuel ash), microsilica (silica fume), GGBFS, quality graded sand, ready mix concrete; asset valuation services, and international trading. We help you gain competitive advantage.

about fly ash

In coal-fired thermal power plants, coal is first ground to the fineness of powder. When blown into the power plant’s boiler, the carbon is consumed - leaving molten particles rich in silica, alumina and calcium.

These particles solidify as microscopic, glassy spheres that are collected from the power plant’s exhaust before they can ‘fly’ away, hence the name is fly ash (pulverized fuel ash). It is a natural by-product from coal combustion, and is not manufactured.

boosting strength and immunity of concrete

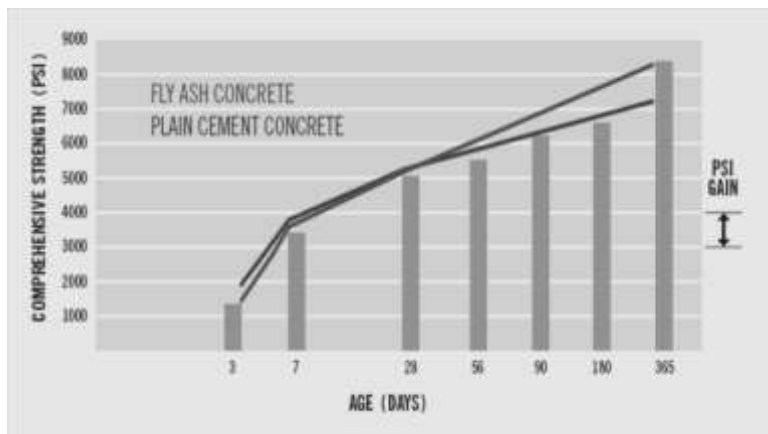
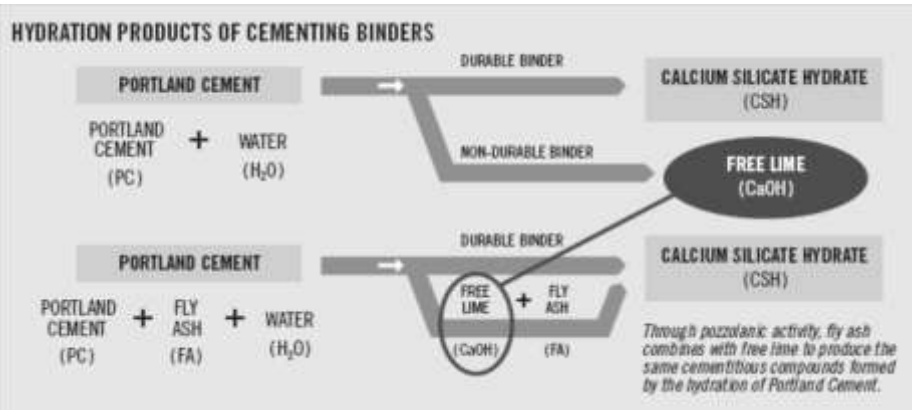
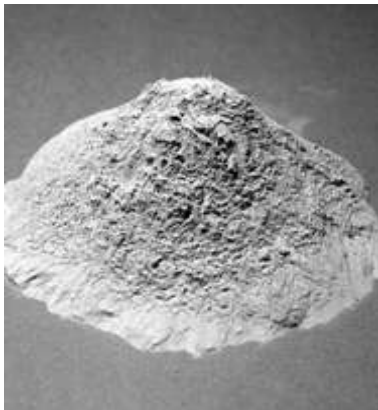
Chemically, fly ash is a pozzolan. When mixed with lime (calcium hydroxide), pozzolans combine to form cementitious compounds. Concrete containing fly ash becomes stronger, more durable, and more resistant to chemical attack.

Further, fly ash particles are hard and round, which has a 'ball bearing' effect that allows concrete to be produced using less water. Both characteristics contribute to enhanced concrete workability and durability.

good for business, good for the environment

Fly ash use creates significant benefits for our environment. Fly ash use conserves natural resources and avoids landfill disposal of ash products. Further, by making concrete more durable, life cycle costs of roads and structures are reduced.

Fly ash use partially displaces production of other concrete ingredients like cement, aggregates, etc. resulting in significant energy savings and reductions in greenhouse gas emissions.





CEMGUARD™ – quality assured fly ash for you

the product

CEMGUARD™ FLY ASH is sourced from state of the art government-run coal-fired thermal power plants in India, which have one-source long-term contracts for quality coal procurement. Moreover, the in-built classification system in the power plant enables extraction of a specific fineness consistently.

quality assurance

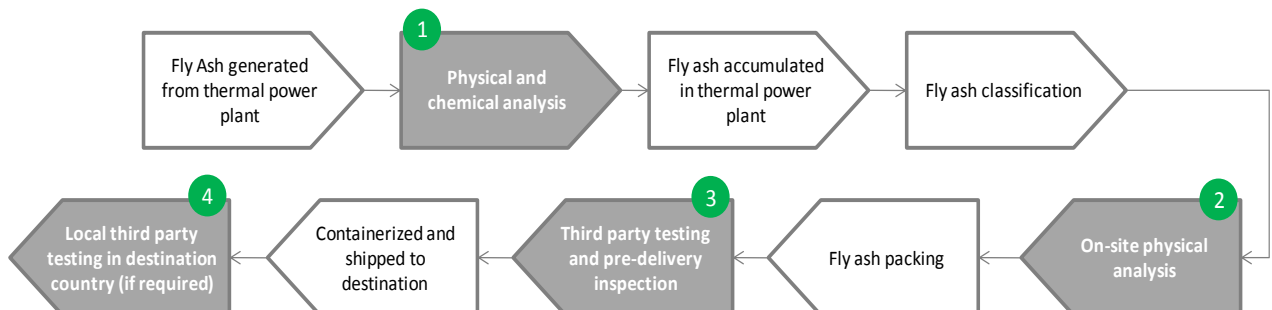
CEMGUARD™ FLY ASH complies with ASTM C618 Class F, BS 3892, BS EN 450 and IS 3812 standards, with a thorough quality assurance process which ensures consistent high quality.

packaging

CEMGUARD™ FLY ASH is packed in 1.1-1.4 MT jumbo bags, with liner. Since jumbo bags are critical during handling of fly ash, we use high grade jumbo bags from one of the largest jumbo bag manufacturers and exporters in India.

The provision of a covered stuffing facility makes it possible to safely export fly ash during the monsoons as well. For local (India based) customers, CEMGUARD™ FLY ASH can be delivered in bulk as well.

CEMGUARD™ FLY ASH Quality Assurance Process



CEMGUARD™ FLY ASH – technical specifications

Properties	Unit	Typical Performance (CEMGUARD™ FLY ASH)	ASTM C618 Class F	BS 3892	BS EN 450	IS 3812
Loss of Ignition	%	2 max	6 max	7 max	5 max	5 max
SiO ₂ Sulfur Dioxide	%	55-65				
Al ₂ O ₃ Alumina	%	28-32				
CaO Calcium Oxide	%	1-2		10 max	2.5 max	
SO ₃ Sulfur Tri-Oxide	%	1 max	5 max	2 max	3 max	3 max
Cl Chloride	%	0.01		0.1 max	0.1 max	0.05 max
Na ₂ O Sodium Oxide Alkali	%	1.5 max			5 max	1.5 max
Fineness – Blaine Permeability	m ² /kg	350-375				320 min
MgO Magnesium Oxide	%	0.55-0.7				
Lime Reactivity	N/mm ²	4.5-5				4.5 min
Strength – Fly Ash + Cement (7 days)	%	80 min	75 min	80 min	75 min	80 min
Autoclave Expansion	%	0.8 max	0.8 max	10 mm	1 max	0.8 max
Fineness (retention on 45 micron/325 sieve)	%	12-30 based on standard	34 max	12 max	40 max (Cat. N) 12 max (Cat. S)	34 max
Moisture	%	0.05-2	3 max	2 max	2 max	2 max
SiO ₂ + Al ₂ O ₃ + Fe ₂ O ₃	%	85-95	70 min	70 min	70 min	70 min

higher strength and better finish

When **CEMGUARD™** FLY ASH is added to concrete, it reacts with calcium hydroxide $\text{Ca}(\text{OH})_2$ liberated during the hydration of cement to form extra C-S-H gel which refines the microstructure of concrete and enhances a range of properties.

The strength gain in concrete continues for a long time. The refinement of microstructure also results in reduction of bleeding - thus giving smooth form finished concrete without segregation or honey-combing.

lower consumption of water and admixtures

CEMGUARD™ FLY ASH produces more cementitious paste and has lower unit weight, thus contributing roughly 30% more volume of cementitious material per pound versus cement.

CEMGUARD™ FLY ASH reduces the amount of water needed to produce a given slump by 2%-10%, while significantly enhancing workability, ease of pumping and compacting concrete. It also reduces consumption of sand and admixtures, because of higher lubrication.

CEMGUARD™ FLY ASH – your competitive and cost advantage



resistance to chemical attacks and corrosion

The extra C-S-H gel formed from the reaction between **CEMGUARD™** FLY ASH and $\text{Ca}(\text{OH})_2$ fills capillaries and bleed water channels occupied by water-soluble calcium hydroxide, thus reducing permeability. This guards concrete from ingress and diffusion of deleterious chemicals like chlorides, sulfates and alkalis from the atmosphere as well as sub-soil.


The reduced ingress of water, corrosive chemicals and oxygen protects steel reinforcement from corrosion.

reduced heat of hydration and longer life

Many applications exist where the rapid heat gain of cement increases the chances of thermal cracking, leading to reduced concrete strength and durability. Replacing cement with **CEMGUARD™** FLY ASH (generates only 15% to 35% as much heat as compared to cement at early ages) can reduce the damaging effects of thermal cracking.

Combined with resistance to chemical attacks, this significantly increases the service life and durability of concrete.


CEMGUARD™ FLY ASH – applications



high strength, high performance concrete, high volume fly ash (HVFA) concrete



real estate – residential, commercial and industrial structures



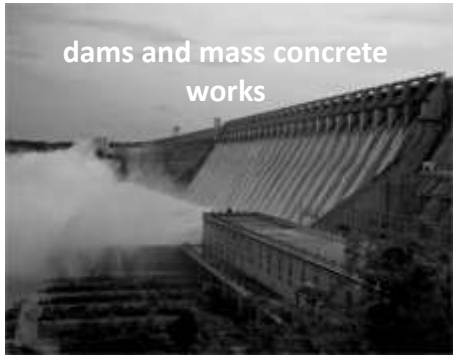
roads, flyovers and pathways



bridges



marine construction – ports, harbors and jetties



dams and mass concrete works



water treatment, sewage and effluent treatment plants



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