



**HITEPOZZO™**  
CEMENT SUBSTITUTE



Building a better world

[www.hitechflyash.co.in](http://www.hitechflyash.co.in)





# HITEPOZZO™

## CEMENT SUBSTITUTE

A Quality assured classified fly-ash

HITEPOZZO is a value added fly ash product from Hi-Tech Fly Ash (India) Pvt Ltd – a 100% Export Oriented Unit. The plant is located at Tuticorin in Tamilnadu, India, and is the first and the only fly ash processing plant in South India. HITEPOZZO is a Quality assured Classified fly ash product in accordance to ASTM C618/BS3892 and is manufactured in indigenous modern plant that is certified to ISO 9001:2008 standards. Hi-Tech Flyash is the pioneer in getting ISI Certificate for flyash from Bureau of Indian Standard. Since the launch in 2005, we have exported to various countries in Middle East Asia, South East Asia, Africa, Europe etc.,

### Product Range

To improve the durability & quality of the concrete, HITEPOZZO is available in different grades based on particle size distribution (Refer inserts for Product specifications). Finest grade of HITEPOZZO is available with max.10% retention on 325 mesh (ASTM C618 Class F calls for max. 34%)

### Applications

- Partial cement replacement in ready mix concrete/mass concrete applications (for advantages see insert)
- Suitable to directly mix with produced cement in manufacturing Blended cement (for advantages see insert)
- Performance improver in manufacturing of Ordinary Portland Cement (OPC)
- Pozzolan material in manufacture of Portland Pozzolana Cement (PPC)
- Partial Cement replacement/Performance improver in manufacturing of Roofing sheet (especially for non asbestos type).
- Partial cement replacement/Performance improver in manufacturing of Brick, Hollow Blocks / Paving Blocks / Tiles.

### Process

HITEPOZZO is produced by careful selection, beneficiation / classification and processing of coal based thermal power station fly ash at our modern plant with latest technology

HITEPOZZO undergoes stringent quality control and provide quality fly ash with consistent and predictable properties

HITEPOZZO is processed to deliver well controlled particle size. Particle size of HITEPOZZO is

guaranteed and hence suitable for all the application with higher replacement of cement in concrete application.

HITEPOZZO is processed to deliver negligible unburnt carbon (loss on Ignition – LOI) content with maximum limit of 2%

### Our Capability

- More than 30,000 MT per month Quality assured classified Fly Ash production capacity
- About 25,000 MT/Month Export availability
- 20,000 MT covered storage facility
- Container stuffing facility within our plant premises
- Ability to provide loading rate upto 2,000 MT/DAY @Tuticorin port

### Limitation of Unprocessed Fly Ash

Quality of the Unprocessed Fly Ash (directly fly ash from the thermal power station ESP hoppers) fluctuates with changes in coal mill and boiler condition and will be having inconsistency in the key parameters like Particle size, unburnt carbon content, moisture content, etc.

Particle size of unprocessed fly ash is not guaranteed and will affect the end applications severely.

Presence of unburnt carbon will lead to negative undesired impact on the concrete, creating severe problem on workability, strength and durability and also increases the water demand.

### Packing

- 1 to 1.4 MT HDPE Jumbo Bags
- 50 Kg Bags
- Bulk tankers



## HITEPOZZO R-12 Product Specification Sheet



**HITEPOZZO**<sup>TM</sup>  
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HITEPOZZO is produced by careful selection, beneficiation/classification and processing of coal based thermal power station fly ash at our ISO 9001:2008 Certified modern fly ash processing unit.

HITEPOZZO is a quality ensured classified fly ash- subject to strict quality control system right from the raw material stage to finished product.

HITEPOZZO R-12 is our finest grade and complies to ASTM C618 Class F and BS 3892-1 requirements

PROPERTY	UNIT	HITEPOZZO R-12
<b>Chemical</b>		
SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub>	%	70-94
SO <sub>3</sub>	%	2(max)
Moisture	%	0.5(max)
Loss on ignition	%	2(max)
Na <sub>2</sub> O	%	1.5(max)
Total Chlorides	%	0.1(max)
<b>Physical</b>		
Fineness (Retention on 325mesh)	%	12(max)
<b>Strength Activity Index with corresponding plain Portland Cement mortar</b>		
Comparative Compressive Strength at 28 days	%	80(min)
Autoclave Expansion, Soundness	%	0.8(max)



### Application

#### Concrete (Partial Cement replacement)

- Ready mix concrete, Plain and reinforced structural concrete with 28 day strength levels up to 50MPa.
- Mass concrete, pre-cast concrete, pumpable concrete and self-compacting concrete.

#### Cement

- Blended Cement (Suitable for direct mixing with produced cement)
- Sulphate resistant / marine resistant cement (PPC)

#### Others:

- Partial cement replacement in general purpose mortar for plastering and flooring.



## HITEPOZZO R-20 Product Specification Sheet



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HITEPOZZO is produced by careful selection, beneficiation/classification and processing of coal based thermal power station fly ash at our ISO 9001:2008 Certified modern fly ash processing unit.

HITEPOZZO is a quality ensured classified fly ash- subject to strict quality control system right from the raw material stage to finished product.

HITEPOZZO R-20 is medium grade fly ash complies to ASTM C618 Class F requirements

PROPERTY	UNIT	HITEPOZZO R-20
<b>Chemical</b>		
SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub>	%	70-92
SO <sub>3</sub>	%	2(max)
Moisture	%	0.05-2
Loss on ignition	%	2(max)
Na <sub>2</sub> O	%	1.5(max)
Total Chlorides	%	0.1(max)
<b>Physical</b>		
Fineness (Retention on 325mesh)	%	20(max)
<b>Strength Activity Index(Portland Cement)</b>		
Comparative Compressive Strength at 28 days	%	80(min)
Autoclave Expansion, Soundness	%	0.8(max)
Remarks		Superior fineness to ASTM C618 Class F

### Application

#### Cement

- Practical cement replacement in general concretes

#### Others:

- Suits to all the application of ASTM C618 Class F Fly ash



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(An ISO 9001:2008 certified 100% Export Oriented Company),  
Mobile: +91 98421 33040 Email: exports@hitechflyash.co.in, Website:www.hitechflyash.co.in



## HITEPOZZO R-34 Product Specification Sheet



**HITEPOZZO**<sup>TM</sup>  
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HITEPOZZO is produced by careful selection, beneficiation/classification and processing of coal based thermal power station fly ash at our ISO 9001:2008 Certified modern fly ash processing unit.

HITEPOZZO is a quality ensured classified fly ash- subject to strict quality control system right from the raw material stage to finished product.

HITEPOZZO R-34 is medium grade fly ash complies to ASTM C618 Class F requirements

PROPERTY	UNIT	HITEPOZZO R-34
<b>Chemical</b>		
SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub>	%	70-92
SO <sub>3</sub>	%	2(max)
Moisture	%	0.05-2
Loss on ignition	%	2(max)
Na <sub>2</sub> O	%	1.5(max)
Total Chlorides	%	0.1(max)
<b>Physical</b>		
Fineness (Retention on 325mesh)	%	34(max)
<b>Strength Activity Index(Portland Cement)</b>		
Comparative Compressive Strength at 28 days	%	80(min)
Autoclave Expansion, Soundness	%	0.8(max)
Remarks		In accordance to ASTM C618 Class F

### Application

#### Cement

- Practical cement replacement in general concretes

#### Others:

- Suits to all the application of ASTM C618 Class F Fly ash



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## HITEPOZZO R-40

### Product Specification Sheet



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HITEPOZZO is produced by careful selection, beneficiation/classification and processing of coal based thermal power station fly ash at our ISO 9001:2008 Certified modern fly ash processing unit.

HITEPOZZO is a quality ensured classified fly ash- subject to strict quality control system right from the raw material stage to finished product.

The following are the economic grades with coarser particles

PROPERTY	UNIT	HITEPOZZO R-40
<b>Chemical</b>		
SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub>	%	70-92
SO <sub>3</sub>	%	2(max)
Moisture	%	0.05-2
Loss on ignition	%	2(max)
Na <sub>2</sub> O	%	1.5(max)
Total Chlorides	%	0.1(max)
<b>Physical</b>		
Fineness (Retention on 325mesh)	%	40(max)
<b>Strength Activity Index(Portland Cement)</b>		
Comparative Compressive Strength at 28 days	%	80(min)
Autoclave Expansion, Soundness	%	0.8(max)

#### Application

##### Cement

- Pozzolana Portland Cement (To be ground along with clinker)
- Performance improver in OPC

##### Others:

- Road embankment
- Land Filling



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## HITEPOZZO R-75

### Product Specification Sheet



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HITEPOZZO is produced by careful selection, beneficiation/classification and processing of coal based thermal power station fly ash at our ISO 9001:2008 Certified modern fly ash processing unit.

HITEPOZZO is a quality ensured classified fly ash- subject to strict quality control system right from the raw material stage to finished product.

The following are the economic grades with coarser particles

PROPERTY	UNIT	HITEPOZZO R-75
Chemical		
SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub>	%	70-92
SO <sub>3</sub>	%	2(max)
Moisture	%	0.05-2
Loss on ignition	%	2(max)
Na <sub>2</sub> O	%	1.5(max)
Total Chlorides	%	0.1(max)
Physical		
Fineness (Retention on 325mesh)	%	75(max)
Strength Activity Index(Portland Cement)		
Comparative Compressive Strength at 28 days	%	80(min)
Autoclave Expansion, Soundness	%	0.8(max)

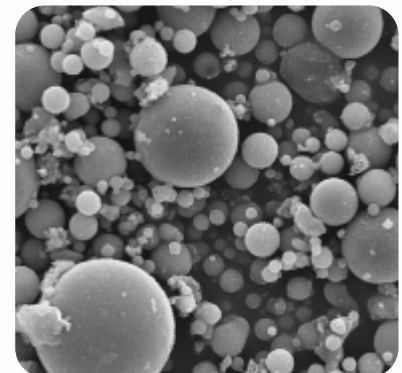
#### Application

##### Cement

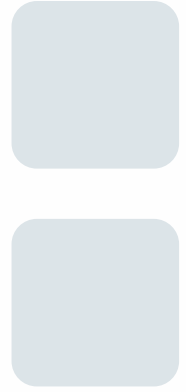
- Pozzolana Portland Cement (To be ground along with clinker)
- Performance improver in OPC

##### Others:

- Road embankment
- Land Filling



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## International Standards Vs HITEPOZZO



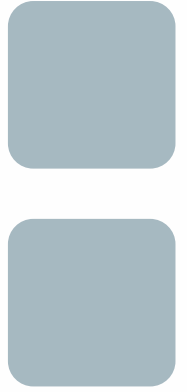
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PROPERTY	UNIT	ASTM C618 Class F	BS 3892	HITEPOZZO				
				R-12	R-20	R-34	R-40	R-75
<b>Chemical</b>								
SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> +Fe <sub>2</sub> O <sub>3</sub>	% min	70	N/R	70-94	70-94	70-94	70-94	70-94
SO <sub>3</sub>	% max	5	2	2	2	2	2	2
Moisture	% max	3	0.5	0.5	0.5	0.5	0.5	0.5
Loss on ignition	% max	6	7	2	2	2	2	3.0
Na <sub>2</sub> O	% max	N/R	N/R	1.5	1.5	1.5	1.5	1.5
Total Chlorides	% max	N/R	0.1	0.1	0.1	0.1	0.1	0.1
CaO	% max	N/R	10	8	8	8	8	8
<b>Physical</b>								
Fineness (Retention on 325mesh)	% max	34	12	12	20	34	40	75
<b>Strength Activity Index with corresponding plain Portland Cement mortar</b>								
Comparative Compressive Strength at 28 days	% min	75	80	80	80	80	75	60
Autoclave Expansion, Soundness	% max	0.8	10	0.8	0.8	0.8	0.8	0.8

N/R - No Requirement



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# HITEPOZZO in Concrete



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### Increased Workability

FEATURES	REASON	BENEFIT
More cementitious paste formation	Portland cement $H_2O = CSH + Ca(OH)_2$ {free lime} HITEPOZZO + $Ca(OH)_2 = csh$ {additional cementitious paste} CSH – Calcium Silicate Hydrate	More effective coating of the aggregates
Spherical shape of HITEPOZZO	Spherical shape behaves as ball bearing and enable it to flow/mix easily.	Reduces the drag against each particle
Both the above features Increase the Cohesion within the Concrete mix		Reduced risk of segregation within concrete under vibration and pumping

### Low Heat of Hydration

Only part of the cementitious material (cement) reacts immediately with the addition of water and HITEPOZZO in concrete mix can be active only after the availability of sufficient free lime i.e. after a little while only. Hence the heat generated by chemical reaction at a given point of time is reduced.

### Settling Time

HITEPOZZO in concrete mix can be active only after the availability of sufficient free lime liberated by cement. This delay in reaction reduces the rate of strength growth in the early hours after placing.

### Improved Impermeability

The strength development of HITEPOZZO in concrete is slower than that of cement and the only place where it can form secondary C-S-H gel growth is within the voids left in the hardened cement matrix. Moreover the smaller size and spherical shape of HITEPOZZO enables it to flow into the voids of cement matrix and thus use of HITEPOZZO fills the gaps in cement matrix and significantly reduces the voids in concrete. Hence the impermeability of concrete is improved.

### ADVANTAGES OF HITEPOZZO IN CONCRETE

- Improved workability benefits easy Handling, Placing, Compacting, Finishing and Transportation
- Low Heat of Hydration benefits Reduced thermal stress/risk of surface crack, Uniform concrete surface and high quality finish
- Improved settling time allows more time for working and compacting the concrete mix, which reduces the risk of cold joints
- Improved impermeability yields resistance to water penetration and attack to binder by salts and chemicals in water. Concrete in marine environment will usually be specified to contain quality PFA component.
- Improved impermeability limits the degree of penetration of  $CO_2$  and improves the life of reinforcement material from corrosion, which reduces the risk of concrete structure crack/failure.
- Concrete requires less water when fly ash (HITEPOZZO) is used in place of cement, resulting in improved water to cement ratio and less shrinkage and cracking.
- Improved lateral strength of concrete (long-term strength gain)



## HITEPOZZO in Cement Manufacturing



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### HITEPOZZO for Blended Cement

HITEPOZZO R-12 is designed to suit Blended Cement Application.

HITEPOZZO R-12 is suitable for direct, intimate and uniform blending with Portland cement to produce Blended Portland Pozzolana Cement.

#### Volume of HITEPOZZO R-12 in Blended Cement

Proportion of fly ash as a Pozzolana used can vary between 15 and 35 percentage by weight of cement (as stipulated by IS 1489 Part I)

#### Advantages

- Plant Capacity increase(15 to 35%)with minor investment of blending unit.
- Reduced average finished product cost and huge profit.
- Improved cement properties covering Fly ash based cement specific applications.

### HITEPOZZO for Pozzolana Portland Cement (PPC)

HITEPOZZO R-65 is suitable for intimate and uniform grinding with Portland cement clinker, Gypsum to produce Pozzolana Portland Cement (PPC).

#### Volume of HITEPOZZO R-65 in PPC

Proportion of fly ash as a Pozzolana used can vary between 15 and 35 percentage by weight of cement (as stipulated by IS 1489 Part I)

#### Advantages

- Reduced Raw Material Cost and Improved Profit
- Improved Cement properties covering Fly ash based cement specific applications.

### HITEPOZZO for Ordinary Portland Cement (OPC)

HITEPOZZO is a suitable raw material along with calcareous and argillaceous material to produce Ordinary Portland cement (OPC)

#### Purpose

Acts as a performance improver of OPC with added Silica, Alumina and Iron Oxide

#### Advantages

- Reduced Raw Material Cost and Improved Profit
- Improved performance of OPC with additional Silica, Alumina and Iron Oxide



### **Quality**

- Processing plant certified to ISO 9001:2008 by Bureau Veritas
- Product complies to ASTM C618/BS 3892 Requirements
- Pre-Shipments Third party quality certification from SGS India/LLOYDS

### **Our Commitment to Environment**

Fly ash Utilization in concrete application as PARTIAL REPLACEMENT FOR CEMENT reduces the cement requirement and hence carbon-di-oxide liberation during cement manufacturing is reduced and is therefore Environment Friendly.

Fly ash Utilization in cement manufacturing reduced the requirement of sub-soil resources like clay, sand, lime stone and hence conserves natural resources



*Enviro***MINDLy**<sup>®</sup>



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**HI-TECH FLYASH (INDIA ) PRIVATE LIMITED**

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