

Superfine Fly Ash (Class F)

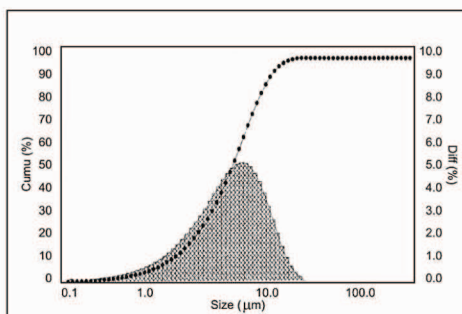
MM-10 Ultrapozz

General Description:

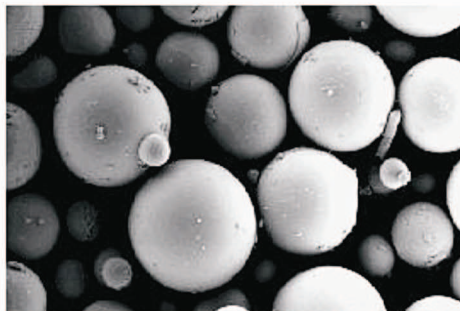
TSG Impex India offers a unique, selective & highly reactive Super fine Class F fly ash with the specifications well surpassing the requirements of Class F fly ash as described in Indian & various international standards. This fly ash is composed of significantly high Alumino-Silicate super fine spherical particles with very low un-burnt Carbon content which exhibits characteristics & properties of Ultrapozz class of pozzolans. In a well designed concrete it improves workability, durability & strength by significantly reducing permeability & thereby producing high performance, highly durable & compacted concrete.

Concrete, basically is a descending particle size composition of aggregates, sand, cement, pozzolans & other additives. In a particular concrete design the size of its components could range from several centimetres to micrometers. The least particle size materials used in concrete are Fly Ash & Cement. While the particle size of a normally used Fly Ash may vary from 10 to 100 microns, ideal cement mostly consist particles size ranging from 15 to 45 microns. When concrete is mixed all the components automatically pack themselves in a complex matrix by fitting lesser sized particles between the void spaces of larger sized particles in a descending order, The spaces between lowest sized particle are filled by water or air which after curing of concrete leaves tiny passages through concrete making it permeable.

It makes sense to use additional pozzolanic ingredients of size theoretically below 15 microns to effectively pack these void spaces between cement particles. Hence for an ideal concrete mix, pozzolans with particle size distribution from 15 microns to submicron range would be highly appropriate. Super Fine Fly Ash MM-10 Ultrapozz has been proclaimed as one of the finest class F fly ash of the world. With particle size distribution from 15 microns to sub-micron range, mean particle diameter of just 5-7 microns & more than 90% particles lesser than 15 micron in size makes it ideal descending particle size pozzolanic filler for filling the void spaces between aggregates & cementitious materials matrix quite efficiently & hence by making concrete densely compact & highly impermeable. This densely packed concrete matrix further leads to reduced water demand.



Typical particle size distribution of MM-10 Ultrapozz



Spherical particles shape



High flexural strength Applications

Superfine Fly Ash MM-10 Ultrapozz has exceptional capabilities described as under-

Enhanced Corrosion control of Concrete in hostile Environment: Concretes exposed to highly hostile environments like marine structures (sea piers, docs, jetties & bridges) & aggressive soils, sewage, corrosive chemicals (drains, chemical plants, highways, airport runways) & acid rains are highly vulnerable to chloride ion ingress & sulphate attacks. Super Fine Fly Ash MM-10 Ultrapozz contains quite high percentage of Alumina which suppresses chloride ions in concrete. Further with its unique particle size distribution & high reactivity, it is possible to design virtually impermeable concrete highly suitable for these aggressive environments.

Enhanced Protection of Steel Reinforcement: Steel is most widely used to reinforce concrete all over the world but with time it gets corroded with the continuous attack of moisture & environment. Super fine fly ash MM-10 Ultrapozz in the concrete reduces steel corrosion very effectively thereby improving the durability of structure.

More Cement Replacement without strength reduction: MM-10 Ultrapozz has very high specific surface area (Blaine) which gives far much greater cement replacement in PPC grades of cement or normal concretes for the same strength development.

Better Workability & increased Cohesiveness: Spherical particle shape of MM-10 Ultrapozz produces a ball bearing effect in concrete which results in better workability & increased cohesiveness of concrete.

Reduced heat of hydration: The lesser water demand is further very effective in the control of heat of hydration by use of MM-10 Ultrapozz. This makes it possible to have larger castings with fairly controlled crack developments.

Partial replacement of Micro Silica in High Performance Concrete: In high strength advanced concrete Micro Silica is used due to its sub micron particle size. MM-10 Ultrapozz acts like a lost link between micro silica & other ingredients like cement & pozzolans to effectively fill the gap in a concrete matrix. Hence partially replacing Micro Silica with a calculated dose of MM-10 Ultrapozz can bring a cost effective solution without sacrificing strength.

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QUALITY CONTROL:

A very strict quality control protocol is observed to ensure the typical parameters of Superfine Fly Ash MM-10 Ultrapozz in optimum ranges.

PACKING:

Superfine Fly Ash MM-10 Ultrapozz is available in 1-1.4 Ton jumbo HDPE bags. Smaller packing or bulker transportation could be arranged against specific requirements.

Specifications & International Standards:

Characteristics	Micro Minechem Superfine Fly Ash MM-10 Ultrapozz	Requirements as per IS:3812 Part 1	Requirements as per BS:3892	Requirements as per ASTM:618
CHEMICAL PROPERTIES :				
SiO ₂ + AL ₂ O ₃ + Fe ₂ O ₃ %	88.0-96.0*	70.0 min	N.S.	70.0 min
Silicon Dioxide SiO ₂ %	55.0 min*	35.0 min	N.S.	N.S.
Sodium Oxide Na ₂ O %	1.0 max*	1.5 max	N.S.	N.S.
Magnesium Oxide MgO %	2.0 max*	5.0 max	N.S.	N.S.
Total Sulfur tri oxide SO ₃ %	1.0 max*	3.0 max	2.0 max	5.0 max
Chlorides %	0.05 max*	0.05 max	0.10 max	N.S.
Loss on Ignition %	0.5-1.0*	5.0 max	7.0 max	6.0 max
Reactive Silica %	25.0 min*	20.0 min	N.S.	N.S.
PHYSICAL PROPERTIES :				
Fineness m ² /kg	500-600*	320 min	N.S.	N.S.
Retention On 45 Micron Sieve %	1.0-10.0*	34.0 max	12.0 max	34.0 max
Soundness by Autoclave %	0.5 max*	0.8 max	1.0max	0.8 max
Compressive Strength, as percent of strength of corresponding plain cement mortar cubes %	85 min*	80 min	80 min	75 min
Specific Gravity	2.1 - 2.3*	N.S.	N.S.	N.S.

* Based on averages of 100 ton lot.

#The Specific surface area of Superfine Fly Ash MM-10 Ultrapozz could truly be determined only by Nitrogen Adsorption Method.

* The parameters as given above are accurate to the best of our knowledge however this information is offered without any guarantee. Product performance may be affected by many factors including storage, transportation, application & use. User testing therefore is essential to determine the suitability of product for intended method of application & use. In no event shall the seller company be liable for any consequential, direct or indirect or any other damage from its use whether arising from negligence or other.

With prolonged storage, Superfine Fly Ash MM-10 Ultrapozz may tend to agglomerate & show some soft superficial lumping. This is due to certain electro static charges present between its very fine particles. This quite normal & does not affect the pozzolanic properties of the material. These soft agglomerates again turn to fine particles while concrete is mixed.