ROYAL FUME

(Microsilica / Silicafume)

Description- Silica fume also known as micro silica is a by product of producing ferrosilicon alloys . It is extremely fine powder generated from the reduction of high quality quartz. Silica fume primary consist of non- crystalline silicon dioxide. It changes the rheology and reacts with the cement hydration product to dramatically improve physical properties of concrete like strength, durability and impermeability, Royal fume is used 8% around 30 kg/m^3. Allowing concrete to be used in ways never before possible at 10% by weight of cement.

Effect in concrete

1- Pozzolanic effect: when water is added to opc , hydration occurs. forming two product as

$$OPC+H2O \quad ---- \quad CSH + Ca(OH)2$$

(calcium silicate Hydrate)

In the presence of Royal fume the silicon dioxide from the Royal fume will react with the calcium hydroxide to produce more aggregate binding CSH as follow.

$$Ca(OH)2 + SiO2- + H2o \rightarrow CSH$$

High strength Concrete: Silica fume in conjunction with super plasticizer is used to produce very high strength concrete (70-120 Mpa) High strength concrete provide large economic benefits to developers eg. Reduced column and wall Thickness in tall building and improved construction schedule. It is also much easier to pump silica fume concrete to high rise building during construction.

High durability and strength make silica fume the Ideal choice in serve Exposures environments.

Micro filler effect: Silica fume is an extremely fine material, with and average diameter 100X finer than cement. At a typical dosage of 8% by weight of cement.

Approximately 1,00,000 particles for each grain of cement will fill the water spaces in fresh concrete.

Additional features: Because of the pozzalanic and micro filler effect of silica fume , its use concrete can improve many of its property opening up a wide range up of application.

Corrosion Resistance: The educed permeability of silica fume. Concrete provides protection against instruction of chloride ions thereby increasing the time take of the chloride ions. Silica fume concrete has much higher electrical Resistivity compared to O.P.C. Concrete thus slowing down the corrosion rate. The combined effect generally increases a structure's life by 5-10 times.

Sulphate Resistance: Silica fume concrete has low penetrability and high chemical resistance that provides a higher degree of protection against sulphates than low C3A sulphate resisting cement or other cementation binder system.

Abrasion Resistance: Silica fume concrete is widely used in industrial structures exposed to any array of aggressive chemicals.

Dosage /Usage: The dosage of Royal fume can be added up to 10% by weight of cement in the concrete depending upon site requirement.

Chemical and Physical composition			
S. No.	PARTICULRAS	UNIT	Royal fume
1	Sio2	%	85-98
2	Cao	%	0.2-0.7

3	A12O3	%	0.4-0.9
4	Fe2 O3	%	1-2
5	Bulc density	Kg/m3	650-700
6	Surface area	m2/g	26
7	Accelerated pozzolanic activity (7 days)	%	95
8	Moisture content	%	1.14
9	Loss on lgnition (LOI)	%	2.80

IMPORTANT

The product are manufactured under stringent quality standard specification and guaranteed against any manufacturing defect based our practical experience and exposure, and are believed to be most appropriate and correct. But no liability can be accepted by us as the condition of use of such products are beyond our control. The user is expected to check, the suitability of particular product for his intended uses