

DESCRIPTION

Synergy High Grade Silica Fume is a high performance, densified silica fume powdered product, Derived as a by-product from the production of Ferro Silicon using the arc furnace method. Used in pre-mixed concrete for enhancing mechanical properties of concretes with special performance requirements, including increased strength, reduced permeability, improved abrasion resistance and increased corrosion resistance.

Synergy High Grade Silica Fume consists of very fine particles. The particle size is approximately 100 times smaller than the average cement particle. Because of its extreme fineness and high silica content, silica fume is a highly effective pozzolanic material. Being a highly reactive pozzolan, silica fume chemically reacts with the calcium hydroxide present in the cement paste, creating a stronger calcium silica hydrate "making it sticky". The result is improved paste to aggregate bond (excellent for shotcrete) and higher concrete strengths.

Synergy High Grade Silica Fume is typically grey in colour and is categorised as a supplementary cementitious material (SCM).

TYPICAL USES

Synergy High Grade Silica Fume can be used to produce all grades of concretes.

Synergy High Grade Silica Fume is suitable for inclusion in general concrete mix designs and in particular has application in high strength/ performance concretes and shotcrete / spray mixes.

ADVANTAGES

The addition of Synergy High Grade Silica Fume can provide;

- Increase compressive strength
- Increase abrasion resistance
- Enhanced sulphate resistance
- Reduces chloride ion permeability
- Enhanced resistance to chemical attack and deterioration
- Improved durability
- Increase bond strength

DOSAGE

The dosage rate for Synergy High Grade Silica Fume will vary depending on the mix design requirements. Users should determine applicable rates of usage for their purpose. This is best achieved by trial mixes. Typical dose rates range from 5% – 10%. Some users will consider the material a cement replacement, others will consider as additional pozzolanic material.

Refer to the technical department of your local pre-mix supplier.

COMPATIBILITY

Synergy High Grade Silica Fume is compatible and effective in concrete containing all types of Portland, and blended cement which may include Supplementary Cementitious Materials such as Fly Ash and Granulated Ground Blast Furnace Slag. Synergy High Grade Silica Fume is also suitable for use with chemical admixtures such as water-reducing, accelerating and retarding admixtures which comply to AS 1478.1

TYPICAL RESULTS

CHEMICAL ANALYSIS

PHYSICAL PARAMETERS

Property	Test Method	Result	Property	Test Method	Result
Silicon as SiO ₂	ASTM C 1240-05	93.16%	Oversize % retained 45 micron	ASTM C 1240-05	3.23%
Moisture Content	ASTM C 1240-05	0.232%	Oversize variation % point from	ASTM C 1240-05	2.01%
Loss on Ignition	ASTM C 1240-05	3%	Pozzolanic Activity Index (7 days)	ASTM C 1240-05	123%
Fe ₂ O ₃	ASTM C 1240-05	0.11%	Surface Area	ASTM C 1240-05	22.00 M ² /Kg
Al ₂ O ₃	ASTM C 1240-05	0.82%	Relative Density (Bulk Density)	ASTM C 1240-05	660 Kg/Cm ³
CaO	ASTM C 1240-05	0.3%			
MgO	ASTM C 1240-05	0.62%			
K ₂ O	ASTM C 1240-05	0.51%			
Na ₂ O	ASTM C 1240-05	0.43%			
C	ASTM C 1240-05	0.007%			
SO ₃	ASTM C 1240-05	0.004%			
Free Si	ASTM C 1240-05	0.007%			
Cl	ASTM C 1240-05	0.003%			

SPECIFICATIONS

Synergy High Grade Silica Fume results exceed that required of AS/NZ 3582.3:2002

STORAGE

Synergy High Grade Silica Fume should be stored in a dry and protected environment.

PACKAGING

Synergy High Grade Silica Fume is supplied in;

- 10 kg degradable bags (96 per pallet)
- 850 kg bulk bags
- Decanting into tankers for bulk delivery into silos

SHELF LIFE

Unlimited when stored in a dry and protected environment.

SAFE HANDLING

Synergy High Grade Silica Fume is classified as hazardous according to the NOHSC criteria and represents a dust hazard that may cause irritation. Users should consult the MSDS for information regarding health and safety. The MSDS for this material is available from **Synergy Pigments Australia Pty Ltd**.

WARRANTY

Synergy Pigments Australia Pty Ltd warrants the products supplied to be free of material defects and to be of a consistent quality. Should any product be proven to be defective, the liability of the manufacturer shall be limited to the replacement of the product ex-factory.

The manufacturer gives no warranty as to the fitness of the products for any particular purpose. The user shall determine the suitability of the product for its intended use; comply with the directions for use and safe handling information available from Synergy Pigments Australia Pty Ltd; and assume all risks and liabilities in connection with the use of this product.

CONTACT

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