

ResTec Silica Fume

Data Sheet

Description

ResTec Silica Fume is a high performance, densified powdered product, derived as a by-product from the manufacture 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.

ResTec Silica Fume consists of very fine particles, typically 100 times finer than cement. 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 hydrate “making it sticky”. The result is an improved paste to aggregate bond (excellent for shotcrete) and higher concrete strengths.

ResTec Silica Fume is typically grey in colour and is categorized as a supplementary cementitious material (SCM).

ResTec Silica Fume is compliant to AS/NZ 3582.3:2002 and is described as a Densified Amorphous Fumed Silica.

Typical Uses

ResTec Silica Fume can be used to produce all grades of concretes. The chemical and physical properties of ResTec Silica Fume can greatly enhance the strength performance and the bonding properties of concrete.

ResTec Silica Fume can be used in various applications and projects: Commercial, Civil, Mining and Marine projects.

ResTec 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 ResTec Silica Fume can provide:

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

Dosage

The dosage rate for ResTec Silica Fume will vary depending on the mix design. Users should determine applicable rates of usage for their purpose. This is best achieved by trial mixes. Typical dosage rates range from 5% - 10%. Some users will consider the material a cement replacement, others will consider it as additional pozzolanic material. Refer to the technical department of your local pre-mix supplier.

Compatibility

ResTec 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. ResTec 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

Property	Test Method	Result	AS 3582.3: 2002
Silicon as SiO ₂	Boral Chemical Method 2	89.6%	> 85%
Sodium as Na ₂ O	AS3583.12 – 1991	0.11%	
Potassium as K ₂ O	AS3583.12 – 1991	0.225%	
Available Alkali	AS3583.12 – 1991	0.25%	No Limit
Chloride as Cl	AS1012.20	0.163	No Limit
Sulphuric Anhydride	AS3583.8	0.83%	< 3.0%
Moisture Content	AS3583.2	1.5%	< 3.0%
Loss on Ignition	AS3583.3	3.8%	< 6.0%
Bulk Density	AS3582.3.6.5	625 kg / m ³	No Limit
Pozzolanic Activity	ASTM C1240-01	116%	No Limit

Specifications

ResTec Silica Fume complies with the requirements of AS/NZ 3582.3:2002

Packaging

ResTec Silica Fume is supplied in:

- 10 kg degradable bags (84 per pallet)
- 890 kg bulk bags

Safe Handling

ResTec Silica Fume is classified 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 or visit www.oxide.com.au.

Warranty

Synergy Pigments Australia Pty Ltd warrants the product 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

Synergy Pigments Australia Pty Ltd
ABN: 62 115 380 099
Unit 6 / 40 Oxleigh Drive,
Malaga WA 6090

Phone: 1300 655 853 (National)
Phone: (08) 9249 9980 (Local)
Fax: (08) 9249 7388
Email: sales@oxide.com.au

Storage

ResTec Silica Fume should be stored in a dry and protected environment.

Shelf Life

Unlimited when stored in a dry and protected environment