Cormix ® SF1

HIGH PERFORMANCE DRY SILICA FUME CONCRETE ADMIXTURE

DESCRIPTION

Cormix SF1 silica fume is an ultrafine spherical, high performance super reactive pozzolanic mineral additive conforming to ASTM C1240 definitions. Composed mostly of silica it is processed from a biproduct and is environmentally friendly.
Due to its excellent pozzolanic properties **Cormix SF1** can be used to enhance both the wet and hardened state properties of concrete. **Cormix SF1** reacts with Calcium hydroxide a biproduct of the cement hydration process which is weak and soluble. This reaction leads to the formation of Calcium silicate hydrate gel (CSH). The content of weak Calcium hydroxide is decreased and the content of CSH increased which gives strength & durability to concrete. The fine particle size of **Cormix SF1** allows it to fill the cement paste matrix thus densifying the concrete resulting in high strength and significant reductions in permeability.

USES & ADVANTAGES

Cormix SF1 is used to increase the density, water tightness, durability and compressive strength of concrete.
High performance concrete is produced with the addition of **Cormix SF1** providing the following advantages:-

- Waterproofs concrete. Reduced water permeability.
- Increased chemical resistance.
- Greatly improved resistance to carbonation.
- Improved durability and abrasion resistance.
- Reduces markedly infiltration of chlorides.
- Very high early and ultimate strengths.
- Reduced bleeding.
- Excellent freeze thaw resistance.
- Reduced rebound in shotcrete.
- Very low chloride ion permeability.
- Improved resistance to sulphates and acidic environments.
- Greater resistance to alkali aggregate reactions.

APPLICATIONS

Applications for **Cormix SF1** include but are not limited to:-

- Marine environment structures.
- Coastal structures.
- Underground structures in aggressive environments.
- Airports.
- High Rise Buildings.
- Waste water treatment plants.
- Bridges, subways, tunnels.
- High abrasion environments.
- Shotcrete.
- Agricultural product processing plants.

Cormix SF1 is supplied in 20 or 25 kg bags and be directly placed into truck mixers or concrete mixers. Bulk bags allow for the material to be conveyed to mixers via standard methods. Slurried SF1 is available in some countries. Concrete containing **Cormix SF1** should be placed and worked like any normal concrete. The concrete may appear "stickier" but can be easily moved by vibration.
Proper curing must take place immediately after concreting due to limited bleed water. For advice on mix design and application of **Cormix SF1** consult Cormix International Technical Department.

PROPERTIES

Appearance:	Grey/Black powder
Composition:	Silica fume
Typical Mean Composition:	SiO2 >90%
Density:	Undensified 200-350 kg/m^3
	Densified 500-700 kg/m^3
Toxicity:	Non toxic

STANDARD

All Cormix products meet International standards.
Cormix SF1 conforms to the requirements of the various standards set by the following :-

- Canadian Standards Association.
- America Society for Testing Materials.
- European Committee for Standardisation.

Cormix SF1 meets the mandatory requirements of the standards as shown below.

Mandatory chemical & physical requirements	CAN/ CSA A23.5-98		ASTM C1240-03		prEN 13263	
	Spec.	Frequency	Spec.	Frequency	Spec.	Frequency
SiO^2 (%)	> 85	500 MT	> 85	400 MT	> 85	weekly
SO^3 (%)	< 1.0	1000 MT			< 2.0	weekly
Cl (%)					< 0.3	weekly
Free CaO (%)					< 1.0	weekly
Free Si (%)					< 0.4	monthly
Alkalies (as equivalent Na_2O, %)			Report	400 MT		
Moisture (%)			< 3.0	400 MT	< 4.0	weekly
Loss on ignition, LOI (%)	< 6.0	500 MT	< 6.0	400 MT	>15 & <35	Monthly
Specific surface (BET - m^2/ gram)			> 15	3200 MT/ 3 months		
Bulk density (kg/ m^3) - undensified			Report	400 MT		
Pozz. Activity Index (%) - 7 days accelerated curing			> 105	3200 MT/ 3 months		
Pozz. Activity Index (%) - 28 days normal curing					> 100	monthly
Retained on 45 micron sieve (%)	< 10	100 MT	< 10	400 MT		
Variation from avg. retained on 45 micron (%-points)			< 5	avg. of last 10 tests		
Density (kg/ m^3)			Report	400 MT		
Autoclave expansion or contraction (%)	< 0.2	1000 MT				
Foaming	No foam	1000 MT				

* Accepts no liability for any direct or indirect damage from its use.

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CLEANING

Clean all tools immediately after use with water.

DOSAGE

Between 2-15% by weight of cement. The dosage is a percentage as dry weight by weight of cementitious material. Higher dosages may be used to achieve specific requirements Consult Cormix for the most appropiate dosage.

Application	Dosage level %
Normal Concrete	4-7
High Strength	7-10
Self-Compacting Concrete	4-10
Low Permeability	7-10
Underwater	12-15
Pumping Aid	2-3
Shotcrete	8-12

PACKAGING

20 / 25 kg paper bags or bulk bags weighting 1.1 MT. Special packaging is available on request. In some countries slurry form is available.

STORAGE

Keep dry in original sealed bags. The shelf life is up to 12 month in original packaging.

HEALTH & SAFETY

During use avoid inhalation of dust and contact with skin & eyes. Wear protective clothing. In case of contact with skin, rinse with plenty of clean water, then cleanse with soap and water. In case of contact with eyes, rinse immediately with plenty of clean water and seek medical advice. If swallowed, seek medical attention immediately do NOT induce vomiting.

TECHNICAL SERVICE

The Cormix International Limited Technical Service Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

QUALITY ASSURANCE

ISO 9001 : 2015 verified by TUV Nord.
ISO 14001 : 2015 verified by Lloyd's Register International.

DISCLAIMER

Performance data is achieved testing in accordance with International Standards. Testing by others may result in different results from those published as a result of external factors such as poor sampling, incorrect mixing, varying temperatures, curing, crushing procedures etc. Cormix does not take responsibility nor need to defend others testing that does not achieve the published data. The user must test the products suitability for the intended application and purpose. Cormix reserves the right to change the properties of the product.
Site conditions and differences in materials are such that no warranty or fitness for a particular purpose, nor liability can be inferred from the published data sheet, written recommendations or from other advise offered.

CONTACT DETAILS

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