

FLOWMAX[®] HF200

Hydrogen Free Expansive And Plasticising Cementitious Grout Additive.

Description:

Sterling® FlowMax® HF200 is a specially formulated hydrogen-free expansive and plasticising additive for cementitious grout where low water to cement ratio and positive expansion is required. The addition of Sterling® FlowMax® HF200 to the cementitious mixes allows producing a high flowable expansive grout, reduced water/cement ratio with consequent increased strengths and durability.

Supplied in powder form, FlowMax® HF200 produces controlled expansion in cement grouts and maintains high water retention. The expansive medium counteracts the natural settlement and plastic shrinkage of the grout and aids stability and cohesion.

Application Includes:

Sterling® FlowMax® HF200 is recommended for use in the following areas of application:

- Post tensioned cables.
- Duct grouting.
- Bed plate grouting.
- Grouting tunnel lining.
- Non-shrink infilling grouts.

Areas to be grouted should be prepared to ensure substrates are clean, sound, and then pre-soaked. The unrestrained surface area of the grout must be kept to a minimum. Place the grout within 20 minutes of mixing to gain the full benefit of the expansion process. Adopt usual placing or pumping procedures ensuring a continuous operation.

The water should be accurately measured into the mixer. The total contents of the Sterling® FlowMax® HF200 bag should be slowly added with the cement and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency. Pumping should be from a single point to eliminate any air or entrapment of water used for pre-soaking. A heavy-duty diaphragm pump is recommended for pumping. Screw feed and piston pumps may also be suitable.

Features & Benefits:

- **Non-Shrink:** Hydrogen free expansion system compensates for plastic shrinkage and settlement in cementitious grouts.
- **High Flow:** Gives high grout fluidity with a low water/cement ratio, thus making placement or injection of the grout easy.
- **Durability:** Low water to cement ratio in the grout mix ensures low permeability and long-term durability in service.
- **Chloride free:** Composition allows high early strength development in grouts, without the use of chlorides.
- **Iron free:** No metallic iron content to corrode and cause staining or deterioration due to rust expansion in the grout.

Limitations:

Low temperature working:

- For ambient temperatures below 10°C the formwork should be kept in place for at least 36 hours. When the air or contact surface temperatures are 5°C or below on a falling thermometer, warm water (30-40°C) is recommended to accelerate strength development.
- Normal precautions for winter working with cementitious materials should then be adopted.

High temperature working:

- It is suggested that, for temperatures above 35°C, the following guidelines are adopted as good working practice.
- Store unmixed material in a cool (preferably temperature controlled) environment, avoiding exposure to direct sunlight. Try to eliminate application during the hottest times of the day.
- Keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment which will come into direct contact with the material itself.
- Make sufficient material, plant and labour available to ensure that application is a continuous process.
- Water (below 20°C) should be used for mixing the grout prior to placement.

Instructions & Usage:

To prepare for placement of Sterling® FlowMax® HF200, ensure sufficient material available on site to ensure continuous grouting. All post tensioned Cables should be carefully cleaned with water prior to grouting process. Any free water must be drained out after cleaning. Cable anchorage should be sealed prior to duct grouting.

Dosage:

For quantity up-to 60 Kg, a slow speed drill fitted with a high shear paddle is suitable. Large quantities will require a high shear vane mixer. It is essential that machine mixing capacity and labour availability is adequate to enable the grouting operation to be carried out continuously. This may require the use of a holding tank with provision for gentle agitation to maintain fluidity.

The selected water contents should be accurately measured and added into the mixes. Slowly add the cement and sand if required and Sterling® FlowMax® HF200. Mix continuously for 5 minutes, making sure that a smooth even consistency is obtained.

Packaging:

FlowMax® HF 200 is supplied in Air tight 225 gm pouch and 30 Kg HDPE bag.

Storage & Shelf Life:

FlowMax® HF 200 has a shelf life of 12 months if kept in dry store in its original packaging. High temperature and humidity storage may reduce this period.

Curing:

On completion of the grouting operation, any exposed area which are not to be back should be thoroughly cured by means of water application, TechnoFinish® ConKure 101/102 curing compound or wet hessian.

Cleaning:

Grout mixed with FlowMax® HF 200 should be removed from tools and equipment with clean water immediately after use.

Yield:

Approximately 35 litre of mixed grout is obtained when mixing 225 gm FlowMax® HF 200, 50 kg cement and 21 ± 2 litre water.

Health & Safety Instructions:

Sterling®FlowMax® HF200 is formulated from chemicals which present no fire or health hazards. Does not fall into the hazard classifications of current regulations. However, it should not be swallowed or allowed to come into contact with skin and eyes. Suitable protective gloves and goggles should be worn. Store all materials and equipment safely and out of reach of children and animals. Observe container labels, SDS, applicable laws and regulations and all instructions before using the product and equipment. In case one of the components comes in contact with the skin, wash thoroughly with soap and water. Provide adequate ventilation in volume and pattern in working area.

***Further protection:** emergency showers and eyewash stations. Get immediate medical attention as needed.

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Disclaimer: The product information & application details given by the company & its agents has been provided in good faith & meant to serve only as a general guideline during usage. Users are advised to carry out tests & take trials to ensure on the suitability of products meeting their requirement prior to full scale usage of our products. Since the correct identification of the problems, quality of other materials used and the on-site workmanship are factors beyond our control, there are no expressed or implied guarantee / warranty as to the results obtained. The company does not assume any liability or consequential damage for unsatisfactory results, arising from the use of our products.

Additional Information: Techno Builders Solutions® By Sterling Technotrade India Pvt.Ltd -The Specialist Construction Chemicals Company® range of associated products includes high performance concrete Admixtures, Adhesives, Protective Coatings, Concrete Repairs, Industrial Flooring, Grouts & Anchors, Joint Sealants, Surface Treatments, curing compounds, repair mortars, release agents, Grinding Aids & Waterproofing.

*Separate datasheet are available on these products.

Typical Properties @ w/c = 0.32

Color:	Brown/grey powder
Expansion(ASTM C937-97)	Up to 3% (based on N_{a_2o} of cement is < 0.39%)
Addition rate:	500 gm Sterling® FlowMax® HF200 : 100 kg cement: 42 ± 2 litre clean water (variable depending on cement type and source)
Chloride content:	Nil to BS 5075 : 1982
Flow characteristics	< 32 sec ASTM C939-87 within 30 min from mixing. Remixing is needed to keep the needed flow
Fresh wet density	Approximately 1900kg/ m3 depending on actual consistency used.
Initial setting time (ASTM C191)	3-4 hours
Compatibility	FlowMax®HF200 is compatible with all types of Portland cement FlowMax®HF200 may be used in mixes containing certain other Techno Builders Solutions® range of admixtures. Consult *STIPL Technical representative for further information.
Compressive strength	The plasticising action of FlowMax®HF200 allows reduction of the water/cement ratio of cementitious grouts whilst maintaining flow properties. This gives improvement in strength and long term durability when cured under restraint.

Proposed Mix:

FlowMax®HF 200	OPC	Sand	Water	Yield
225 g	50kg	-	21 ± 2	35 ltr
225 g	50kg	50kg	23 ± 2	56 ltr

Note: For grout, mortar or concrete mixes with an aggregate cement ratio more than 1, use 4 x 225 g units of FlowMax® HF 200 per 100 kg of cement.

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