

Expanding plasticizing agent for cement based, grouts, mortars and concrete

Description of Product

RHEOMAC[®] GF314 produces controlled expansion in ordinary Portland cement based mixes and maintains high water retention for curing. It also contains a water-reducing agent, which allows reductions in w/c ratio, hence increasing compressive strength and durability. Full expansion is achieved before initial setting occurs resulting in a positive bond.

Fields of Application

- Underpinning

The inadequate protection against corrosion offered by normal grouts is due to:

- High macro-porosity caused by bleed water collecting under strands and in the upper part of the sheath. When bleed water evaporates and is reabsorbed by the cement paste, voids form thus providing easy access for corrosive substances. European recommendations on prestressed concrete (FIP) prescribe that the volume of bleed water must not exceed 0.5%. With use of RHEOMAC[®] GF314, the volume of bleed water is considerably lower: it ranges

from 0 to a maximum of 0.3% depending upon the type of cement used.

- Low w/c are achievable (0.35-0.40) affording low permeability.
- Shrinkage of cement paste and consequent cracking. RHEOMAC[®] GF314 allows shrinkage to be eliminated and also slight expansion to occur during setting and hardening.
- RHEOMAC[®] GF314 is a chloride free product, which is especially important in the case of cables.

Features and Benefits

- A cement plasticizing and water reducing agent to improve the free-flowing properties of the grout at low water/cement ratios.
- An expanding agent, which develops hydrogen gas during the hydration process, thereby increasing the volume of the grout, which in turn eliminates the shrinkage and sedimentation characteristics, which would otherwise normally be encountered.
- A controlled the rate of expansion of the grout to ensure full expansion with various sources of cement.
- Does not contain any chlorides or nitrates.

Technical Data/Typical Properties

Appearance	Brown/Grey powder
Composition	A blend of non-ferrous metallic expanding agents and lignin-based water reducing agents with a catalyst, which promotes controlled expansion in cement, grouts and maintains high water retention for positive curing.
Chloride Ion Content	<0.1% w/w (nil)
Flashpoint	None

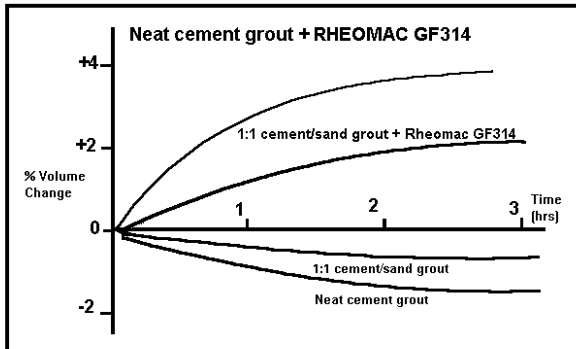
Expanding Properties

The following graph clearly illustrates how the addition of RHEOMAC[®] GF314 creates controlled expansion in cement grouts.

The expansion of grouts containing RHEOMAC[®] GF314 is sufficient to overcome normal sedimentation without producing undue pressure against the sides of the duct.

The grout therefore forms a firm and uniform bond to the concrete and to the steel along the length of the tendon, and at the same time provides good protection for the cable. The expansion obtained by the use of RHEOMAC[®] GF314 in cement grouts reaches a maximum within 1 - 2½ hours of mixing under average temperature conditions.

After this period no sedimentation occurs, and the grout retains its maximum expansion. RHEOMAC® GF314 produces a maximum expansion of approximately 3% in a neat cement grout, and 2% expansion in a 1:1 cement/sand grout.



Application Procedure

Mixing

First add the water to the mixer and then the Portland cement. Mix this thoroughly until the cement has been completely dispersed. Then pour the RHEOMAC® GF314 and sand (if any is being used), and continue mixing for a further 2 minutes or until complete dispersion of the grout has been obtained.

The type of mixing equipment generally used in preparing cement grouts is that which will produce a high local turbulence, thus ensuring an efficient breakdown and dispersion of the cement.

Grouts for ducts of post-tensioned concrete members should be passed through a 1.18mm BS sieve before reaching the pump, and the pump should be capable of giving a continuous flow of grout to the injection equipment.

Dosage

RHEOMAC® GF314 is used at the rate of 500 gm per 100 kg cement in the grout, and can be used either with ordinary Portland cement or Rapid Hardening Portland Cement. During the winter months when temperatures fall between 7°C and 1°C, it is recommended that Rapid Hardening Portland Cement should be used in grouts for filling the ducts of post-tensioned concrete members.

Recommended Grout Specifications for Grouting Ducts of Post-Tensioned Concrete Members:

Neat Cement Grout	
Ordinary Portland Cement	100kg
RHEOMAC® GF314	500gms
Water	<50 litres
Cement Sand Grout	
Ordinary Portland Cement	100kg
Sharp Graded Sand (passing BS 1.18mm seive):	100kg
RHEOMAC® GF314	500gms
Water	<54 litres

Packaging

RHEOMAC® GF314 is available in 250gm units. These sachets are not dissolvable.

Storage

Store at ambient temperatures in manufacturer's sealed containers.

Shelf Life

Up to two years when stored according to manufacturer's instructions.

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RHEOMAC[®] GF314, BASF Construction Chemicals (UK) Limited, Version 8**Health and Safety**

*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

Spillage

Chemical products can cause damage; clean spillage immediately.

DISCLAIMER

"BASF Construction Chemicals (UK) Limited" (the Company) endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, the Company has no control over the selection of its products for particular applications. It is important that any prospective customer, user or specifier, satisfies him/her-self that the product is suitable for the specific application. In this process, due regard should be taken of the nature and composition of the background/base and the ambient conditions both at the time of laying/applying/installing the material and when the completed work is to be brought into use.

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