Conplast F 297

constructive solutions

Foam cement admixture

Uses

For the production of foamed low density mortars. Typical applications include trench filling for road reinstatement, lightweight roofing screeds and the filling of undesirable voids such as old sewers and solvent tanks.

Towers, chimneys, high buildings, slipform structures, tunnel/ shaft lining, offshore construction and in-situ piles.

Advantages

- When used with approved foam generating equipment, produces a consistent pre-foam which is stable under the alkaline conditions of cement mortars.
- Easily controlled additions of pre-foam to pre-batched mortar allows close control of finished product density.
- Suitable for production of a wide range of finished densities.
- Foamed mortar provides an easily placed lightweight product at an economic price.

Description

Conplast F297 is concentrated solution of selected surfactant materials which is diluted with water before use. Used with the approved Fosroc Foam Generator, Conplast F297 produces a consistent pre-foam that is stable under alkaline conditions and therefore suitable for use in the production of foamed mortars.

Foamed mortar has many uses, including trench fi lling during road reinstatement, lightweight roofi ng screeds and void filling. The materials is highly mobile, being able to flow for long distances under its own hydrostatic head, and is therefore particularly suitable for fi lling old sewers and solvent tanks.

By controlled variation of the amount of pre-foam added to a pre-mixed mortar, the production of a desired density fi nished product can be achieved. The minimum attainable density will vary for particular mix designs and performance requirements.

Typical finished densities of down to 1000 kg per m3 can be obtained with 1:1 sand:cement mortars and down to 600 kg per m3 with 1:2 sand:cement mortars. Local materials may give values above or below these values. It is important that the specifi c requirements of a particular mix are considered and trials performed to ensure compliance.

Typical Properties

Appearance : Clear liquid

Specific gravity : Typically 1.04 @ 27°C

Compatibility with other admixtures

Conplast F297 should not be mixed with other admixtures. The Fosroc Technical Service Department can give advice on the use of other admixtures in the same finished mortar.

Compatibility with cements

Conplast F297 is compatible with Portland cement. Consult the Fosroc Technical Service Department for advice on use with special cements or cement replacement materials

Limitations

Conplast F297 should not be diluted with water which is below 10ºC in temperature. If water temperatures below 10°C are encountered, the water can be warmed to above 10°C by means such as the use of an immersion heater. Dilutions of Conplast F297 should not be allowed to cool to below 10°C.

Low temperatures signifi cantly reduce the foaming effectiveness of the product. Dilutions should not be made with concrete wash water or water from other sources containing high levels of calcium ions.

Dosage

The dosage of Conplast F297 required will vary, depending on the desired final mortar density and the original starting material. Further details on a suitable procedure for determining the required quantities are given later in this sheet. Typical dosages are in the range 0.6 to 2.0 litres of undiluted material per cubic metre of fi nished mortar over a density range of 1500 to 600 kg per m3. The use of dosages outside this range may be suitable in certain circumstances. In these cases the Fosroc Technical Service Department should be contacted for advice.

Instructions for use

Conplast F297 should be diluted with potable water and used to produce a pre-foam that is mixed into a pre-batched mortar. Varying the amount of foam added to a mortar allows the production of a range of densities of fi nished product.

Conplast F297 is not intended for direct addition to mortar and use in this manner will not produce foamed systems.

The Fosroc Foam Generator has been designed to produce a pre-foam system. This equipment is recommended for use with Conplast foam admixtures. All information in this data sheet is based on the use of this equipment.

Dilution and preparation

Dosage

Dilute Conplast F297 by taking 4 litres of admixture and diluting to 100 litres with water; this can easily be done in the holding tank of the Fosroc Foam Generator, using the volume graduation marks.

Dilution should be made using potable water at a temperature above 10oC. Concrete wash water is not suitable. If the locally available water has a high hardness it is recommended that the diluted material produced is used immediately

With the system set to re-circulation, the pump on the generator can be switched on. The pump can remain switched on even when foam is not immediately required but if this is done the valve at the delivery unit should be kept in the re-circulation position until foam is required. If more than the initial 100 litres of diluted material are required, the generator holding tank can be topped up at any time. The volume graduation marks on the level tube provide a usual means of measurement for this purpose. Topping up should be done by adding 1 litre of Conplast F297 diluted to 25 litres with potable water each time. During topping up, the valve at the delivery unit should be switched to the recirculation position for two minutes to ensure an even mixing

Foam addition procedure

After production, foamed mortar will be of a fl uid, self levelling consistency and therefore it is not usually practical to transport it from plant to site. It will normally be most convenient for the pre-foam to be added on site to a mortar delivered in a ready mix truck. If foamed mortar is transported for long distances in the truck drum, or if there are signifi cant time delays between the addition of the pre-foam and the placement of the foamed mortar, some breakdown of the foam may occur. This will increase density and reduce yield.

When foam production is required, the valve on the delivery unit is turned from the re-circulation to the delivery position and a pre-foam will be produced. The pre-foam is added into the back of the ready mix drum with the drum on fast spin. The rotation of the drum blends the pre-foam and mortar together to produce the fi nished foamed mortar. Fast spin should be maintained for 2-4 minutes after the addition of the pre-foam to ensure complete blending.

Foam generation can be stopped at any time by returning the valve at the delivery unit to the re-circulating position.

When blending of the pre-foam and mortar is complete, the foamed material is ready for placement. The mortar is self levelling and can be fl owed into place directly, or down trenches, gullies or pipes. The foamed mortar can also be pumped using standard concrete pumping equipment. Contact the Fosroc Technical Service Department for further information.

Initial mortar mix proportions

A sand:cement mortar should be pre-batched into the ready mix truck. Best results will be obtained with fi ner sands with a high proportion of material passing a 300 µm sieve. The use of sands containing large amounts of coarse material, larger than 2 mm in diameter, may lead to a less stable foamed product, particularly at the lower densities.

If densities down to 1000 kg per m3 are required, it is recommended that the batched mortar should be a 1:1 sand:cement mix. If densities below 1000 kg per m3 are desired it is recommended that a 1:2 sand:cement mortar should be used. Trials should be performed to check that the combination of strength and density desired are obtained. Mortar mix proportions may be varied from the suggested starting values above if so indicated by the results obtained in the trials.

Initial mortar workability

The delivered mortar should be batched to have a workability equivalent to a collapse slump prior to the addition of the foam; the water content to give this will typically result in a water:cement ratio in the range 0.4-0.5 but may vary depending on the sand grading. Where appropriate to the needs of a particular job ornecessary due to the water demand of local materials, valuesoutside these limits may be used.

The workability of the delivered mix is particularly critical to the amount of foam required for a desired fi nal density. Mixes of lower workability than that suggested above may cause diffi culties in blending the pre-foam into the mortar and, therefore, extended mixing periods may be required. If the pre-foam does not blend into the mortar after three to four minutes fast spin, a small quantity of water should be added into the back of the truck and the fast spin period repeated.

The Fosroc Foam Generator produces a pre-foam at a consistent expansion and output rate. The most convenient means of measurement of addition is to time the process.

Figure 1 shows, on the horizontal axis, typical foam addition times that will be required to produce a fi nished foamed aterial of the target wet density, read off the left hand axis, for each cubic metre of an original mortar of 2200 kg per m^3 density. In practice this can be used for most mortar mix designs without major variation.

Figure 1 also shows, on the right hand axis, the volume of original mortar required to produce a foamed mortar of the target wet density desired, again based on an original mortar density of 2200 kg per m3. It is clearly important that there is suffi cient free space in the drum to accommodate the volume increase with foam addition. The original weights should be determined with this in mind.

The values obtained from Figure 1 should only be taken as a guide, as a number of factors may affect the fi nished density and therefore the amount of pre-foam required for a desired value. If finished densities below those given on the Figure are required,then addition levels should be determined for each case.

Figure 1 should be used as follows:

1) Determine the desired fi nished density and the amount of original mortar batched in the ready mix truck. The amount batched can most easily be obtained from the batch ticket.

2) For the first truck of a pour, read off the lower curve on Figure 1 the suggested addition time for the fi nished density required. The value obtained is the addition time for each cubic metre of original mortar. Add the total pre-foam required and measure the density produced (a suitable method of density measurement is detailed below).

3) If the density obtained is higher than that desired then more pre-foam can be added. To estimate the additional amount required, determine where on the Figure the measured density and actual addition time meet and then move parallel to the existing lines until the fi nal desired density is reached. This point will then indicate the total pre-foam addition time required, again for each cubic metre of starting mortar, and the extra time needed can be calculated by the difference between this value and the addition time so far.

4) For subsequent trucks of the same pour and using the same materials, the addition time per cubic metre of original mortar should be the same as for the first truck. If the volume of original mortar varies between trucks the total pre-foam addition time must be modifi ed to allow for this. It is recommended that the foamed density should be checked for each truck individually to ensure compliance with requirements.

Density measurement

The density of the foam material can be measured by using a spring balance and a container of known volume (approximately 5 litre is suitable). The weight of foamed material to fi ll the container will allow the calculation of a wet density. The dry density of the foamed material will typically be 50 – 100 kg per m3 lower than the wet density. It is recommended that wet density measurement is always used as a routine quality control check.

Yield

Unless extremely tight control is exercised, which will require extra time, the density of a foamed mortar is likely to vary by +100 kg per m3. The variability should be allowed for in estimating the possible volume of material required. Certain factors may also lead to changes in density and therefore reduced yield. Losses will not always occur but their possibility should be taken into account. Possible causes include; delays in discharge from a truck, transport of foamed mortar over long distances such as may occur if pre-foam is added at a ready mix plant instead of on site, and pumping.

If foamed concrete is placed against a dry substrate there is the possibility of foam collapse due to the suction of moisture out of the foamed mortar. If this situation exists, the substrate should be wetted before placing the foamed mortar to reduce the likelihood of the problem.

Cleaning and disposal

Spillages of Conplast F297 should be absorbed onto sand, earth or vermiculite and transferred to suitable containers. Care should be taken in the disposal of excess or waste material, due to the high bacteriological oxygen demand. Disposal should be carried out in accordance with local water and waste authority regulations.

Compressive strength

The compressive strength of a hardened foamed mortar is proportional to its density and also to the cement content of the original mortar. Lower density fi nished products will have lower compressive strengths.

A number of factors, such as water:cement ratio and materials used, can have an effect on the compressive strength. Trials should be performed using the conditions that will apply in practice.

Precautions

Health and safety

Conplast F297 does not fall into the hazard classifi cations of current regulations (see notes 1 and 2 below). However, it should not be swallowed or allowed to come into contact with skin and eyes.

Suitable protective gloves and goggles should be worn. Splashes on the skin should be removed with water. Prolonged contact with the skin should be avoided, as some degreasing of the skin may occur. In case of contact with eyes rinse immediately with plenty of water and seek medical advice. If swallowed seek medical attention immediately - Do not induce vomiting.

Fire

Conplast F297 is water based and non-fl ammable.

For further information see the relevant Material Safety Data Sheet.

Storage

Conplast F297 has a minimum shelf life of 12 months provided the temperature is kept in the range of 10°C to 50°C. Prlonged storage below 10oC may result in a slight turbidity or separation of the product. This will be evident in the form of a cloudy solution or a separation of the material. If this occurs the affected material should be warmed gently and thoroughly remixed to restore the normal clear appearance. The performance of the product will not be affected if this procedure is observed.

Should the material become frozen, it must be completely thawed and thoroughly remixed before use.

Technical service

The company provides a technical advisory service for nonsite assistance and advice on evaluation trials and dispensing equipment.

Packaging

Conplast F297 is available in 210 and 25 litre drums. Suitable foaming equipment can be supplied.

Further information

Technical data and guidance can also be provided on a wide range of admixtures, including accelerators, retarders, water reducers, workability aids, air-entraining agents, waterproofers, mould release agents, surface retarders, curing membranes and other special materials.

Note 1 : CPL Regulations 1984 supply - Schedule 1.

Note 2 : HSE Publication Guidance Note EH40

FOSROC
MATT INDIA CO
G-25, SECTOR -63,
GAUTAM BUDDH NAGAR,
UP-201307 INDIA

Phone No:
09555666476
09555655544

Emaiil:mattindia1@gmail.com

www.fosroc.com