

Conplast R



Conplast R
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Retarding water reducing admixture

Uses

- To improve the effectiveness of the water content of a concrete mix
- To extend the setting time of concrete, extending working times and minimising delay problems
- To extend the working life of semi-dry concrete screeds
- Particularly suitable for use in mixes with high cohesion

Advantages

- Water reduction significantly improves compressive strengths at all ages and enhances durability through the production of low permeability concrete
- Controlled retardation extends working life and stiffening time for ease of construction
- Control of stiffening improves slip forming and assists in preventing the formation of cold joints in large pours
- Slightly reduces cohesion, improving placement of over cohesive mixes
- Allows specified strength grades to be met at reduced cement content or increased workability
- Chloride-free, safe for use in prestressed and reinforced concrete

Standards compliance

Conplast R complies with BS 5075 Part 1 and with ASTM C494 as Type B and Type D.

Description

Conplast R is a chloride-free water reducing admixture based on selected hydroxycarboxylic materials. It is supplied as a brown solution which instantly disperses in water.

Conplast R disperses the fine particles in the concrete mix, enabling the water content of the concrete to perform more effectively. The initial hydration of the cement is also delayed, resulting in a delay in the setting time of the concrete with no adverse effect on subsequent stiffening and strength gain.

Technical support

Fosroc provides a technical advisory service for on-site assistance and advice on admixture selection, evaluation trials and dispensing equipment. Technical data and guidance can be provided for admixtures and other products for use with fresh and hardened concrete.

Typical dosage

The optimum dosage of Conplast R to meet specific requirements should always be determined by trials using the materials and conditions that will be experienced in use. This allows the optimisation of admixture dosage and mix design and provides a complete assessment of the concrete mix. A starting point for such trials is to use a dosage within the normal typical range of 0.25 to 0.60 litres / 100 kg of cementitious material, including PFA, GGBFS or microsilica.

Use at other dosages

Dosages outside the typical range quoted above may be used if necessary and suitable to meet particular mix requirements, provided that adequate supervision is available. Compliance with requirements must be assessed through trial mixes. Contact the Fosroc Customer Service Department for advice in these cases.

Properties

| | |
|--------------------------|--|
| Appearance: | Brown liquid |
| Specific gravity: | Typically 1.13 at 20°C |
| Chloride content: | Nil to BS 5075 |
| Air entrainment: | Typically slightly less air will be entrained than in a normal concrete mix |
| Alkali content: | Typically less than 55.0 g. Na ₂ O equivalent / litre of admixture. A fact sheet on this subject is available |



Instructions for use

Retardation

Retardation will be obtained at all dosages within the normal range referred to above and will be significantly increased at the higher dosages. The level of retardation obtained may be varied to meet specific requirements by altering the dosage of Conplast R used, this will also change the level of water reduction obtained. Trials should be carried out to ensure that the desired retardation is obtained under the conditions to be experienced on site.

Retardation is also affected by factors other than the admixture, depending on the mix details and conditions involved. Major factors include the following:

- (a) Cement replacement materials will give greater levels of retardation than those experienced with plain OPC mixes at the same admixture dosage.
- (b) High temperatures will require increased dosages to obtain the same change in stiffening time compared to a control mix without admixture. At the same time, the setting of the control mix will be faster at the higher temperature.
- (c) At lower temperatures, a greater amount of retardation will be obtained for a given dosage. The setting time of a control mix without admixture will also be extended at the lower temperature.
- (d) Changes in cement content, source or chemistry may lead to variations in the retardation obtained. The amount of tri-calcium aluminate in the cement has been identified as being one of the main contributory factors in this respect, with a lower level leading to greater retardation.

Compatibility

Conplast R is compatible with other Fosroc admixtures used in the same concrete mix. All admixtures should be added to the concrete separately and must not be mixed together prior to addition. The resultant properties of concrete containing more than one admixture should be assessed by the trial mix procedure recommended on this data sheet to ensure that effects such as unwanted excessive retardation do not occur.

Conplast R is suitable for use with all types of ordinary Portland cements and cement replacement materials such as PFA, GGBFS and silica fume. Further information on such usage is provided elsewhere on this data sheet.

Dispensing

The correct quantity of Conplast R should be measured by means of a recommended dispenser. The admixture should then be added to the concrete with the mixing water to obtain the best results. Contact the Fosroc Customer Service Department for advice regarding suitable equipment and its installation.

Effects of overdosing

An overdose of double the intended amount of Conplast R will result in a significant increase in retardation as compared to that normally obtained at the intended dosage. Provided that adequate curing is maintained, the ultimate strength of the concrete will not be impaired by increased retardation and will generally be increased. The effects of overdosing will be further increased if sulphate resisting cement or cement replacement materials are used.

An overdose will tend to increase the plasticising effect of the admixture. As concrete is normally batched to a target workability, increased plasticising will allow an increased water reduction. This will have the effect of increasing ultimate strength and partially or fully offsetting the effect of any increased air entrainment. If no increase in water reduction is taken, and a significant rise in workability is allowed, the chance of segregation may be higher. Increased initial workability will tend to extend the working life of the concrete, which will delay finishing and stiffening times to some extent.

Overdosage may also lead to reduced mix cohesion and may cause segregation and bleeding, particularly in high workability mixes. The degree of this effect will depend on the particular mix design and overdose level.

Curing

As with all structural concrete, good curing practice should be maintained, particularly in situations where an overdose has occurred. Water spray, wet hessian or a Concure* spray applied curing membrane should be used.

Typical performance examples

Many variables in concreting materials and conditions can affect the selection and use of an admixture. Trials should be made using relevant materials and conditions in order to determine the optimum mix design and admixture dosage to meet specific requirements.

Typical performance examples from evaluation studies of Conplast R, are included on this data sheet. The values quoted are representative of results obtained and are provided as illustrations of performance in different

situations. Because of the variability of concreting materials, the results should only be taken as typical of the performance to be expected. Results quoted in individual examples should not be taken as necessarily directly comparable with other examples given here or results obtained elsewhere for Conplast R or other products.

Unless otherwise specified, all testing was carried out to the relevant parts of applicable British Standards.

Example 1: Laboratory testing for normal ready-mixed concrete at 20°C

Cement content 305 kg/m³, gravel aggregate, all mixing carried out at equal workability

| Mix | Dosage litres / 100 kg | Stiffening: Time to reach penetration values of | | | W/C ratio | Compressive strength N/mm ² | | |
|------------|---------------------------|---|------------------------------------|------------------------|--------------|---|-------|--------|
| | | 0.5 N/mm ² | 3.5 N/mm ² | 27.6 N/mm ² | | 3 day | 7 day | 28 day |
| | | BS 5075 initial — | BS 5075 final ASTM C403 initial | — ASTM C403 final | | | | |
| Control | — | 4 hr 30 | 6 hr 00 | 7 hr 30 | 0.68 | 20.5 | 28.0 | 37.5 |
| Conplast R | 0.28 | 6 hr 30 | 8 hr 00 | 10 hr 00 | 0.62 | 24.5 | 35.0 | 46.0 |
| Conplast R | 0.42 | 8 hr 00 | 9 hr 15 | 11 hr 30 | 0.58 | 27.5 | 37.5 | 47.5 |
| Conplast R | 0.56 | 10 hr 00 | 11 hr 15 | 13 hr 30 | 0.56 | 27.5 | 39.0 | 49.0 |

Example 2: Laboratory testing for normal ready-mixed concrete containing microsilica replacement

Gravel aggregate, mixes carried out with 100% OPC and with 5% microsilica replacement

| Mix | OPC/MS kg/m ³ | Dosage litres / 100 kg | W/C ratio | Slump mm | Setting time BS 5075 final | Compressive strength, N/mm ² | | | |
|------------|-----------------------------|---------------------------|--------------|-------------|-------------------------------|---|-------|-------|--------|
| | | | | | | 1 day | 3 day | 7 day | 28 day |
| Control | 325 | — | 0.52 | 85 | 3 hr 35 | 21.5 | 33.0 | 41.5 | 53.5 |
| Conplast R | 325 | 0.30 | 0.48 | 95 | 6 hr 10 | 22.5 | 41.0 | 52.5 | 67.5 |
| Control | 310/15 | — | 0.53 | 85 | 3 hr 30 | 22.0 | 36.0 | 43.0 | 60.5 |
| Conplast R | 310/15 | 0.30 | 0.49 | 90 | 6 hr 05 | 23.0 | 42.0 | 50.0 | 74.5 |

Limitations

The reduction in mix cohesion obtained with Conplast R may lead to some segregation and bleeding in mixes which have low initial cohesion, such as those using coarse sands or low cement contents. Contact the Fosroc Customer Service Department for advice in these cases.

Estimating – packaging

Conplast R is available in drum and bulk supply. For larger users, storage tanks can be supplied. Details of specific packaging volumes are available on request.

Storage

Conplast R has a minimum shelf life of 12 months provided the temperature is kept within the range of 2°C to 50°C. Should the temperature of the product fall outside this range then the Fosroc Customer Service Department should be contacted for advice.

Freezing point: Approximately -4°C.

Precautions

Health and safety

Conplast R 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. 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.

For further information consult the Product Safety Data Sheet available for this product.

Fire

Conplast R is water based and non-flammable.

Cleaning and disposal

Spillages of Conplast R should be absorbed onto sand, earth or vermiculite and transferred to suitable containers. Remnants should be hosed down with large quantities of water.

The disposal of excess or waste material should be carried out in accordance with local legislation under the guidance of the local waste regulatory authority.

* See separate data sheet.

Important note

Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard Conditions for the Supply of Goods and Services, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation, specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products, whether or not in accordance with any advice, specification, recommendation or information given by it.