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Conplast P211

FM 610

Water reducing admixture

Uses

- To improve the effectiveness of the water content of a concrete mix.
- At higher dosages to provide a cost effective means of reducing concrete permeability and thereby reducing water penetration.

Advantages

- Allows specified strength grades to be met at reduced cement content or increased workability.
- Water reduction significantly improves compressive strengths at all ages and enhances durability through the production of low permeability concrete.
- Minimises the risk of segregation and bleeding and assists in the production of a dense, close textured surface, improving durability.
- Chloride free, safe for use in prestressed and reinforced concrete.

Standards compliance

Conplast P211 complies with BS 5075 Part 1 and with ASTM C494 as Type A.

Conplast P211 complies with the requirements of the United Kingdom Water Fittings Byelaws Scheme and is listed in the Directory of Materials as suitable for use in contact with potable water under its previous name of Conplast 211.

Description

Conplast P211 is a chloride free water reducing admixture based on selected sugar-reduced lignosulphonates. It is supplied as a brown solution which instantly disperses in water.

Conplast P211 disperses the fine particles in the concrete mix, enabling the water content of the concrete to perform more effectively and improving the consistency of the concrete. This produces higher levels of workability for the same water content, allowing benefits such as water reduction and increased strengths to be taken.

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 P211 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 0.28 to 0.42 litres/100 kg of cementitious material, including PFA, GGBFS and microsilica.

Use at other dosages

Dosages outside the typical ranges 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 1.19 at 20°C
Chloride content:	Nil to BS 5075
Air entrainment:	Typically less than 2% additional air is entrained at normal dosages.
Alkali content:	Typically less than 5.0 g. Na_2O equivalent/litre of admixture. A fact sheet on this subject is available.

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Instructions for use

Compatibility

Conplast P211 is compatible with other Fosroc admixtures in the same concrete mix. All admixtures should be added to the concrete separately and must not be mixed together prior to addition. The performance 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 retardation do not occur.

Conplast P211 is suitable for use with all types of ordinary Portland cements and cement replacement materials such as PFA, GGBFS and silica fume.

Reducing water permeability ('Waterproofing')

One of the most effective means by which the water permeability of a concrete mix can be reduced is to make a large reduction in water:cement ratio. Conplast P211 can be used to provide such a reduction and to produce a concrete with the benefits of low permeability.

A separate information sheet on this use of Conplast plasticisers is available and must be read in conjunction with this product data sheet.

Dispensing

The correct quantity of Conplast P211 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 P211 will result in an increase in retardation as compared to that normally obtained at the intended dosage. This effect is found with most water reducing admixtures, although the degree may vary. Retardation is affected by factors other than the admixture, depending on the mix details and conditions involved. Trials to assess the effects in a particular mix are strongly recommended if this aspect is of particular importance. 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.

Overdosage may also cause increased air entrainment, which will tend to reduce strength. The degree of this effect will depend on the particular mix design and overdose level.

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.

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.

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Typical performance examples with UK materials

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 to determine the optimum mix design and admixture dosage to meet specific requirements.

Typical performance examples from evaluation studies of Conplast P211 are included on this data sheet. The values quoted are representative of results obtained and are provided as illustrations of the 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 quoted elsewhere for Conplast P211 or other products.

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

Example 1: Testing at varying cement contents with marine sand and gravel aggregates for normal readymixed concrete

Mix	Dosage litre/100 kg	Cement content kg/m³	Density kg/m³	W/C ratio	Slump mm	Compressive strength N/mm² 7 day	28 day
Control	-	300	2360	0.64	60	34.5	44.5
Conplast P211	0.35	300	2355	0.59	60	43.0	51.0
Control	-	350	2375	0.55	55	45.5	55.0
Conplast P211	0.35	355	2390	0.50	60	53.0	63.5
Control	-	405	2385	0.47	55	55.0	63.0
Conplast P211	0.35	410	2390	0.44	60	63.0	71.5

Example 2: Laboratory testing at varying cement contents with 30% PFA replacement and limestone aggregates

Mix	Dosage litre/100 kg	OPC/PFA kg/m³	Density kg/m³	W/C ratio	Slump mm	Compressive strength N/mm² 7 day	28 day
Control	-	210/90	2440	0.62	60	24.0	35.0
Conplast P211	0.35	210/90	2450	0.55	60	31.0	43.5
Control	-	245/105	2440	0.52	55	31.0	44.0
Conplast P211	0.35	245/105	2450	0.47	60	36.5	52.5
Control	-	280/120	2440	0.47	50	36.0	50.0
Conplast P211	0.35	280/120	2450	0.42	60	43.0	59.5

Example 3: Laboratory testing at varying cement contents with 40% GGBFS replacement and marine gravel aggregates

Mix	Dosage litre/100 kg	OPC/GGBFS kg/m³	Density kg/m³	W/C ratio	Slump mm	Compressive strength N/mm² 7 day	28 day
Control	-	180/120	2360	0.65	50	26.5	41.5
Conplast P211	0.35	180/120	2360	0.60	55	34.0	50.0
Control	-	210/140	2365	0.56	55	36.5	52.0
Conplast P211	0.35	210/140	2385	0.50	50	46.5	62.5
Control	-	240/160	2385	0.49	60	46.0	61.5
Conplast P211	0.35	240/160	2390	0.45	55	57.0	73.0

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Estimating - packaging

Conplast P211 is available in drum or bulk supply. For larger users, storage tanks can be supplied. Details of specific packaging volumes are available on request.

UN packaging regulations

To comply with current regulations, all products of a hazardous nature that are involved in a sea crossing as part of the delivery requirements must be packed in United Nations Approved receptacles.

When a known sea crossing is involved, whether local to the United Kingdom or for export worldwide, Fosroc will supply in the correct UN packaging. Where Fosroc are only requested to deliver within the United Kingdom mainland, but the purchaser intends to ship on, it is incumbent on the purchaser to specify that UN packaging is required at the time of placing the order. Otherwise, once delivery is received, the responsibility is that of the purchaser.

The use of UN packaging may affect the selling price of products. Refer to the local Fosroc office or representative.

Storage

Conplast P211 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 -3°C

Precautions

Health and safety

Conplast P211 does not fall into the hazard classifications 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. 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 Material Safety Data Sheet available for this product.

Fire

Conplast P211 is water based and non-flammable.

Cleaning and disposal

Spillages of Conplast P211 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.

Additional information

Conplast P211 was previously known as Conplast 211.

Note 1: CPL Regulations 1984 Supply- Schedule 1
Note 2: HSE publication Guidance Note EH40
*See separate data sheet

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Important note