

Hydraplast-Super S

High performance water reducing and strength accelerated admixture

Innovative products for your success

Use

- To significantly reduce the water demand of a concrete mix without reducing workability, allowing greatly increased early and ultimate strengths without additional cement.
- To significantly improve the workability of concrete without increasing water demand.
- Particularly suitable for increasing workability of ready-mixed concrete at elevated temperatures.
- To reduce concrete permeability and thereby reduce water penetration and enhance durability.

Advantages

- Use in production of flowing concrete permits easier construction with quicker placing and compaction and reduced labour costs.
- Workability loss in high workability concrete is slower than normally found with superplasticisers.
- Major increases in strength at all ages without increased cement contents are of particular benefit in precast construction.
- Reduction in water: cement ratio enhances durability, producing low permeability concrete with reduced shrinkage cracking potential.
- Chloride free, safe for use in prestressed and reinforced concrete.

Standards compliance

Hydraplast-Super S complies with BS 5075 Part 3 and with ASTM C494 as Type A, Type F and Type G. **Hydraplast-Super S** is suitable for use in contact with potable water.

Description

Hydraplast-Super S is a chloride free high performance water reducing admixture based on specially selected and blended organic polymers. It is supplied as a brown solution which instantly disperses in water. Cemplast-Super S disperses the fine particles in the concrete mix, enabling the water content of the concrete to perform more effectively. The improved dispersion of cement particles enhances the efficiency of hydration. Normally a slight retardation of set of between one and two hours will be obtained.

Technical support

Cemkrete 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

Hydraplast-Super S the optimum dosage to meet specific requirements should always be determined by trials using the materials and conditions which will be experienced in use. This allows the optimization of admixture dosage and mix design and provides a complete assessment of the concrete mix. Starting points for such trials, based on the primary use of the product, are to use a dosage within the normal typical ranges. For high strength, water reduced concrete the normal dosage range is from 0.50 to 1.50 liters/100 kg of cementitious material, including PFA, GGBFS and micro-silica. For high workability concrete the normal dosage range is from 0.50 to 1.00 liter/100 kg of cementitious material. Where a combination of performance is required, such as some increase in workability combined with reduced water content, then the whole range of dosages from 0.50 to 1.50 liters/100 kg of cementitious material can be considered.

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 Cemkrete office for advice on these cases.

Properties

Appearance:	Brown liquid
Specific gravity:	Typically 1.18 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 72.0 g. Na ₂ O equivalent/liter of admixture. A fact sheet on this subject is available.

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Instructions for use

Mix design

Where the primary intention is to improve strengths, initial trials should be made with normal concrete mix designs. The addition of the admixture will allow the removal of water from the mix whilst maintaining the workability at the levels obtained before the use of the admixture. After initial trials, minor modifications to the overall mix design may be made to optimize performance. Where the primary intention is to provide high workability concrete, the starting mix design should be suitable for a pump mix. Advice on mix design for flowing concrete is available from Cemcrete on request.

In correctly designed flowing concrete, the improved dispersion of cement particles and more efficient use of mixing water will improve mix cohesion. The slight air entrainment obtained with **Hydraplast-Super S** will also help to minimize bleed and segregation. After initial trials, minor modifications to the mix design may be made to optimize performance.

Compatibility

Hydraplast-Super S is compatible with other Cemcrete 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 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 retardation do not occur. **Hydraplast-Super S** is suitable for use with all types of ordinary Portland cements and cement replacement materials such as PFA, GGBFS and silica fume.

Dispensing

The correct quantity of **Hydraplast-Super S** should be measured by means of a recommended dispenser. Normally, the admixture should then be added to the concrete with the mixing water to obtain the best results. Contact Cemcrete office for advice regarding suitable equipment and its installation.

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 Cemform* spray applied curing membrane should be used.

Effects of overdosing

An overdose of double the intended amount of Cemplast-Super S 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. Over dosage 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 greatly increase the plasticizing effect of the admixture. As concrete is normally batched to target workability, increased plasticizing 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, there is a strong possibility of mix segregation. Increased initial workability will tend to extend the working life of the concrete, which will delay finishing and stiffening times to some extent.

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 **Hydraplast-Super S** are included on this data sheet. The examples 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 **Hydraplast-Super S** or other products. Unless otherwise specified, all testing was carried out to the relevant parts of applicable British Standards.



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Mix design sample

Example 1: Laboratory testing for water reduction and workability increase, gravel aggregates:

Mix	Dosage Liter/100 kg	Cement content kg/m ³	W/C ratio	Slump mm	Compressive strength N/mm ²		
					1 day	7 day	28 day
Control	-	300	0.69	80	9.5	25.0	37.0
Hydraplast-Super S	1.20	300	0.56	75	14.0	37.5	48.0
Control	-	300	0.69	75	-	29.5	38.0
Hydraplast-Super S	1.00	300	0.69	collapse	-	29.5	39.0

Example 2: Laboratory testing at varying dosage with 8% micro-silica addition and gravel aggregates:

Mix	Dosage Liter/100 kg	OPC/microsilica kg/m ³	W/C ratio	Slump mm	Compressive strength N/mm ²		
					1 day	7 day	28 day
Control	-	340/27	0.51	70	11.5	39.5	57.0
Hydraplast-Super S	0.70	340/27	0.50	65	17.0	43.0	61.5
Hydraplast-Super S	1.00	340/27	0.45	100	20.0	46.5	62.0
Hydraplast-Super S	1.50	340/27	0.40	collapse	24.5	49.5	69.0

Example 3: Laboratory testing at varying dosage with 35% PFA replacement and gravel aggregates:

Mix	Dosage Liter/100 kg	OPC/PFA kg/m ³	W/C ratio	Slump mm	Compressive strength N/mm ²		
					1 day	7 day	28 day
Control	-	195/105	0.58	75	9.5	22.0	33.0
Hydraplast-Super S	0.50	195/105	0.52	75	12.0	26.5	37.0
Hydraplast-Super S	0.75	195/105	0.51	80	12.5	28.0	38.0
Hydraplast-Super S	1.00	195/105	0.50	80	13.0	30.0	41.0

Example 4: Laboratory testing at varying dosage to show workability increase, gravel aggregates:

Mix	Dosage Liter/100 kg	Cement content kg/m ³	W/C ratio	Slump mm	Flow mm	Compressive strength N/mm ²			
						1 day	7 day	28 day	
Control	-	300	0.61	75	-	17.5	34.5	45.0	
Hydraplast-Super S	0.75	300	0.61	0.61	-	52.0	18.0	35.5	43.5
Control	-	300	0.70	-	525	13.0	26.0	35.0	
Hydraplast-Super S	1.00	300	0.61	0.61	-	64.0	17.5	35.5	44.0



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Estimating and packaging

Hydraplast-Super S is available in 200 liter drum or bulk supply. For larger users, storage tanks can be supplied. Details of specific packaging volumes are available on request.

Storage

Hydraplast-Super S 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 storage falls outside this range then please consult with Cemcrete office for advice.

Freezing point : Approximately -3°C

Precautions

Health and safety

Hydraplast-Super S does not fall into the hazardous 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.

Fire

Hydraplast-Super S is water based and non-flammable.

Cleaning and disposal

Spillages of Hydraplast-Super S 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 guidelines of the local waste regulatory authority.

Additional Information

Cemcrete manufactures and supplies a wide range of those complementary products which includes:

- Waterproofing membranes & waterstops
- Joint sealants & filler boards
- Cementitious & epoxy grouts
- Specialized flooring materials
- Fireproof coating and systems
- Concrete admixture
- Repairing material

For further information on any of the above, please consult your local Cemcrete office - as below.

Important Note: Cemcrete warrants its materials free of manufacturing defects and produced as per standard specifications and sold under the terms and conditions of usages, whilst Cemcrete endeavors to ensure that any advice, recommendation, or information, given through its products literatures are reflects of the R&D in-house lab test and practical sites experience and knowledge based feed backs, however, the products are being used under various conditions and applied beyond its control where or how either directly or indirectly at various locations and places at a different stages that of an intended purposes and uses. Therefore, Cemcrete cannot hold warranty or responsible for resultant consequences, such as damages to the property or assets but the product itself.