

Conplast UW

Underwater Concrete Admixture System

Uses

Conplast UW is an admixture system specially designed to:

- Allows concrete to be placed underwater
- Increases the cohesion of concrete mixes and minimizes washout
- Produces well compacted high quality concrete

Advantages

- Reduces washout of cement paste during placing
- Can remove need for specialist placing equipment
- Allows higher strength and reinforced concrete to be satisfactorily placed underwater.

Description

Conplast UW is a chloride free water soluble polymer supplied as a fine powder. Conplast UW produces a gel in the water which surrounds the cement particles and protects them from washout.

Conplast UW delays the initial set of concrete and so allows longer transport and placing times. Once the concrete is in place, no washout will occur.

Dosage

The normal dosage of Conplast UW is 0.6% by weight of cement, but it can be used at up to 1.0% though some increase in retardation must be expected. Site trials should be carried out to establish the optimum dosage for the mix to be used and method of placement.

Effects of overdosing

An overdose of double the recommended measure of Conplast UW will result in an increase in the anti-washout properties, significantly increased retardation and strength loss of the concrete.

Properties

Compacted bulk density	:	550 – 650 kg/m ³
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Chloride content	:	Nil to BS5075
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Compatibility with Cements

Conplast UW is suitable for use with all types of Portland cements, SRC cements and cement replacement materials such as PFA, GGBFS and microsilica.

Compatibility with Other Admixtures

Conplast UW is not generally compatible with other types of admixture. It has been formulated to give good workability and the additional use of a plasticizing admixture is not normally recommended. If it is found necessary to use a plasticizer or other type of admixture.

Setting times

Stiffening time of concrete using Conplast UW is retarded by approximately 3 to 5 hours at normal dosages, depending on temperature, cement and mix characteristics.

Cement washout

Typically ordinary concrete can exhibit a washout of up to 30% of the fines content. Using Conplast UW in the same mix, this can be reduced to less than 6%. Washout resistance is assessed by filling a perforated basket with the concrete mix, allowing it to drop through water five times and measuring the loss in weight of the concrete after each drop.

Instructions for Use

Mix Design

Mix proportions should be determined as for a cohesive pump mix. A sand content of 40-55% of the total aggregate weight is recommended. Normal minimum cement content for underwater placing is 400 kg/m³. Site/plant trials must be carried out to determine the optimum mix design and workability requirements.

Mixing

When concrete is made using a forced action mixer, Conplast UW should be added towards the end of the mixing cycle. It should be added slowly and with care. Mixing should continue for a further 1-2 minutes. When concrete is truck mixed Conplast UW should be added to the concrete after mixing either at the plant if near the site, or at site.

Conplast UW

Conplast UW should be added slowly into the truck and mixed for 5-10 minutes at high speed. It is essential that truck mixers used are in good condition.

Agitator trucks are not suitable. When the concrete is truck mixed it may be necessary to adjust the workability of the concrete after Conplast UW has been added. This may be done with a small amount of additional water or the addition of a suitable plasticizer. The concrete should be constantly agitated until the moment of placing.

Placing

The concrete may be pumped, skipped or tremied into place, alternatively it may be flowed down an incline. Free fall of highly workable concrete tends to result in turbulent flow which segregates the mix and increases water/cement ratio. At high workability it is, therefore, not recommended that the concrete is allowed to free fall, even from the end of a tremie.

Typical results

Mix design

OPC	:	400 kg/m ³	
20 mm gravel	:	750 kg/ m ³	
10 mm gravel	:	370 kg/ m ³	
Sand (Zone M)	:	655 kg/ m ³	
Conplast UW			
Dosage (% ww)	Nil		0.66
W/C ratio	0.49		.50
Slump	190		220
Flow	25/59		27/49
Washout after			
5 drops (%) :	29		6

Compressive strength (N/mm²)

1 day	:	15	10
7 days	:	43	39
28 days	:	53	50

Technical Support

Fosroc provides a technical advisory service for on-site assistance and advice on admixture selection, evaluation trials and dispensing equipment.

Supply

Conplast UW	:	4.5 kg bag
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Storage

Conplast UW should be stored in its sealed bags, protected from moisture and off the floor. A minimum shelf life of 12 months could then be expected.

Precautions

Health and safety

Conplast UW has no specific health hazards. It is non-toxic but should not be ingested. Any eye contamination should be flushed with clean water and medical advice should be sought.

Fire

Conplast UW powder may burn slowly. Use water to extinguish.

Cleaning and disposal

Spillages of Conplast UW will get when in contact with moisture and should therefore be removed in the dry state. 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.



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