



# Conplast UW

## Undercover concrete admixture system

### Uses

CONPLAST UW is an admixture system specially designed to allow concrete to be placed underwater. CONPLAST UW increases the cohesion of concrete mixes and minimises wash out enabling concrete to be easily placed underwater, and produces well compacted, high quality concrete. CONPLAST UW is a development of CONPLAST 447\*, FOSROC's proven underwater concrete admixture.

### 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 off-white powder. CONPLAST UW produces a gel in the water which surrounds the cement particles and protects them from washout.

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

### Properties

Chloride content: Nil to BS 5075

Compacted bulk density

of the powder: 550 - 650 kg/m<sup>3</sup>

#### Compatibility with cements :

Conplast UW can be used with all types of Portland cements and pozzolans, For advice on special cements, consult FOSROC's Technical Department.

#### 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 plasticising admixture is not normally recommended.

If it is found necessary to use a plasticiser or other type of admixtures, FOSROC's Technical Department should be contacted for advice.

### Setting times:

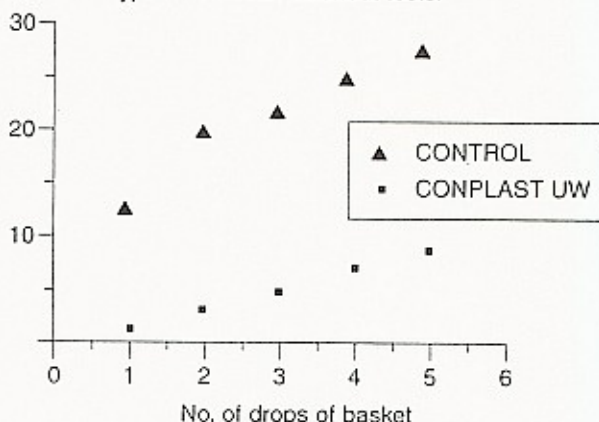
Stiffening time of concrete using CONPLAST UW is retarded by approximately 3 to 5 hours at normal dosages, depending on temperature, cement and mix characteristics.

### Cement Washout:

Typically, ordinary concrete can exhibit a washout of up to 30% of this fines content. Using CONPLAST UW in the same mix, this can be reduced to less than 6%. See Figure 1.

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.

FIGURE 1 : Typical results of washout tests.



Reference: plunge test "Laboratory method of testing Concrete For Placement Underwater" B.A. Davies, International Conference on Concrete in the Marine Environment, London, 1986.

### Instruction for use

**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.

**Overdosing:** An overdose of double the recommended measure of CONPLAST UW will result in an increase in the antiwashout properties, significantly increased retardation and strength loss of the concrete.



**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. A Normal minimum cement content for underwater placing is 400kg/m<sup>3</sup>. 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 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 additional of a suitable plasticiser.

See "Compatibility with other admixtures".

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 Test Results

##### Mix Design:

OPC 400 kg/m<sup>3</sup> 20mm Gravel 750 kg/m<sup>3</sup> 10mm Gravel  
370 kg/mm<sup>3</sup> Sand, Zone 655 kg/m<sup>3</sup>

Dosage CONPLAST UW (% W/W)	W/C	Slump	Flow	Washout after 5 drops (%)	Compressive Strength (N/mm <sup>2</sup> )		
					1 days	7 days	28 days
Control 0.66	0.49	190	25/59	29	15	43	53
	0.50	220	27/49	6	10	39	50

#### Precautions

**Health and Safety:** CONPLAST UW has no specific health hazard; it is non-toxic but should be ingested. Any eye contamination should be flushed with clean water and medical advice should be sought.

**Celaning:** Spillages of CONPLAST UW will get when in contact with moisture and should therefore be removed in the dry state.

**Fire:** CONPLAST UW powder may burn slowly. Use water to extinguish.

#### Storage

CONPLAST UW should be stored in its sealed bags, protected from moisture and of the floor. A minimum shelf life of 2 months could then be expected.

#### Packaging

CONPLAST UW is supplied in a variety of package sizes to suit individual requirements. Please contact FOSROC for further details.

#### Supply

Contact your local FOSROC office or representative

#### Technical Service

The company provides a technical advisory service or on site assistance and advice on concrete mix design mix design and evaluation trials.

#### Additional Information

Technical data and guidance can be provided on a wide range of admixtures, and concreting aids including acceferators, retarders, waterproofer, ould release ageng, surface retarders, workability aids and repair materials.

\* See separate data sheet.



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