

X-Mix UW

Underwater concrete admixture system

Product Description

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

X-Mix 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.

Advantages

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

Uses

X-Mix 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.

Laboratory Test Data

Property	Typical Results	
	Control	Actual
Slump	230	230
Flow	25/50	27/51
Washout after 4 drops (%)	29	5
Compressive strength (N/mm ²)		
1 day	15	10
7 days	46	42
28 days	55	51

Mix Design for results shown above

	Control	Actual
OPC	450 kg/m ³	
20 mm gravel	440 kg/m ³	
10 mm gravel	530 kg/m ³	
Sand (Zone M)	800 kg/m ³	
Dosage X-Mix UW (%w/w)	Nil	0.45%
W/C	0.42	0.42

Application Properties

Chloride content	Nil to BS 5075
Compacted bulk density	550 to 650 kg/m ³
Classification according to ASTM C494	Type S

Packaging

4.5 kg and 25kg packs

Dosage

The recommended dosage of X-Mix UW typically ranges from a minimum of 0.2% to a maximum of 0.5% by weight of cement. However, to determine the most effective dosage for a specific mix and method of placement, it is essential to conduct site trials. These trials help establish the optimal dosage, ensuring the best possible performance and consistency of the mix.

Effects of overdosing

An overdose of double the recommended measure of X-Mix UW will result in an increase in the anti-washout properties, significantly strength loss of the concrete.

Compatibility with cements

X-Mix UW is suitable for use with all types of Portland cements, SRC cements and cement replacement materials such as PFA, GGBFS and micro silica.

Compatibility with other admixtures

X-Mix UW is specifically engineered to work seamlessly with Xtreme WR33, its ideal companion admixture. It is generally incompatible with other admixtures, as its performance is optimized when used in combination with Xtreme WR33. This precise formulation ensures that when X-Mix UW and Xtreme WR33 are used together, they deliver consistent and reliable results without compromising the integrity or quality of the mix.

Setting times

Stiffening time of concrete using X-Mix 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 X-Mix UW in the same mix, this can be reduced to less than 5%.

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 to 55% of the total aggregate weight is recommended. A 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, X-Mix 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 to 2 minutes.

Agitator trucks are not suitable. When the concrete is truck mixed it may be necessary to adjust the workability of the concrete after X-Mix 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.

Shelf life

X-Mix 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.

Clean Up

Spillages of X-Mix 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.

Health and Safety

This product is for industrial use only by trained operatives. It is not considered hazardous if used correctly. Please refer to the Material Safety Data Sheet (MSDS) prior to the purchase and use of this product. The MSDS can be obtained via our website www.x-calibur.us.

Authorized Technical Specialist

Please note that only X-Calibur Authorized Technical Support Specialists ('ATSS') are permitted to change any of the information in this data sheet or to provide written recommendations concerning the use of this product. Visit www.x-calibur.us for a full list of X-Calibur ATSS.

Datasheet Validity

X-Calibur makes modifications to its product datasheets on a continuous basis. Please check the datasheet update section on www.x-calibur.us to ensure you have the latest version.

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NCC

Quality Statement

All Products manufactured by NCC X-CALIBUR or Imported from X-CALIBUR companies world-wide are manufactured to procedures certified to conform the quality, environment, systems described in the ISO 14001:2004. ISO 9001:2000.



Hotline: 16960

E-mail: Info#ncc.com.eg