

CONFLO BOND-UWA

USES

- ❖ To minimize washout of concrete placed underwater
- ❖ Increases internal cohesion of the concrete mix, reducing the tendency of cement and other particles to be washed out of the concrete mix during placement
- ❖ Facilitates the placement of concrete underwater by normal methods such as tremie pipe delivery.
- ❖ Once placed, concrete is more resistant to the action of moving water .
- ❖ Allows the production of higher quality and higher strength concrete underwater.
- ❖ Contains workability and setting control agents to assist in providing the levels of workability and working life necessary to allow control of placing.

DESCRIPTION

CONFLO BOND-UWA underwater concrete admixture is a chloride free blend of selected polymers supplied as a fine brown powder.

When added to concrete, CONFLO BOND-UWA produces a gel in the water phase which surrounds the cement particles and other fine components of the concrete mix and protects them from excessive washout both during placement and once the concrete is finally in position.

Unlike other antiwashout materials, CONFLO BOND-UWA also contains plasticising agents which counteract the effects of the increased cohesion necessary to minimise washout and allow normal workability levels to be maintained without the addition of extra water.

CONFLO BOND-UWA provides a degree of retardation to the concrete mix, allows longer journey times from batching to placement and better control of the placing process.

The optimum dosage of CONFLO BOND-UWA to meet specific requirements must 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.

Such trials should start at a dosage of 1.00 kg / 100 kg of cement. After initial trials at this dosage, further trials at reduced dosage may be performed to determine the most cost effective dosage level that will also give the level of anti-washout protection required. Lower dosages will tend to reduce the degree of washout protection obtained. In normal use dosages below 0.6 kg / 100 kg of cement will not normally be found effective.

Dosages outside the typical range suggested 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.

Appearance: Light brown powder

Bulk density: Typically 600 kg/m³

Chloride content: Nil to BS 5075

Alkali content: Typically less than 6.0 g. Na₂O equivalent / kg of admixture. A fact sheet on this subject is available. At the normal dosages recommended on this data sheet a retardation of typically 3 to 6 hours beyond a normal control mix will be obtained. This will depend on the dosage used, cement chemistry and other mix characteristics. At lower temperatures this retardation will be further increased.

Washout resistance can be assessed by filling a perforated basket with the proposed concrete mix and allowing it to drop five times through a specified depth of water. Normal concrete will show a high level of washout

in such a test. The loss of weight of samples with and without CONFLO BOND-UWA can be compared.

At ready-mixed plants CONFLO BOND-UWA may be added by sprinkling onto the sand or aggregate feed belt. Where concrete is truck mixed it is essential that the truck mixer is in good condition. Agitator trucks are not suitable.

CONFLO BOND-UWA should be added after the mixing of the base concrete is complete. This may be carried out either at the batching plant or on-site. In either case Conflo UWA should be added slowly and the concrete mixed for a further 5 to 10 minutes at high speed to ensure dispersion of the admixture throughout the load of concrete.

It may be necessary to finally adjust the workability of the concrete after the addition of the CONFLO BOND-UWA. This can be done by the addition of a small amount of water or a suitable plasticising admixture.

After mixing, the concrete should be continuously agitated until placing commences. Placement through a concrete pump is normally the most suitable method. Placement by skip or tremie may also be used. Where a tremie method of placement is used it is essential that the fresh concrete received into the hopper at the head of the tremie pipe is always in sufficient volume to provide an uninterrupted and steady flow down the pipe. The tremie pipe should be of such a diameter to ensure that the concrete flow down it is not faster than the feed from the hopper. If these precautions are not followed water will be drawn into the pipe and forcibly mixed with the concrete.

Flow of concrete from the tremie should always be carefully controlled by moving the end of the pipe within the placed concrete. The tremie should be smooth bored

and of a suitable diameter compared to the maximum aggregate size, typically 150 mm maximum diameter for

20 mm aggregate.

If concrete is to be placed in preformed reinforcement cages, allowances should be made in the reinforcement design to ensure that the tremie pipe or concrete pump has access into the lower sections of the cage.

An overdose of double the intended amount of Conflo bond UWA will result in a significant increase in air entrainment, which will tend to reduce strength, and a significant increase in the level of retardation. The degree of this effect will depend on the particular mix design and overdose level.

The cohesion and anti-washout properties of the concrete will be increased which is likely to lead to an increased water demand to obtain a usable workability.

As with all structural concrete, good curing practice should be maintained. If concrete remains underwater then the water itself will provide the curing necessary. If concrete is placed near the water line and is likely to remain exposed for significant periods of time then the provision of alternative curing should be considered.

Many variables in concreting materials and conditions can affect the selection and use of an admixture. Trials should be carried out using relevant materials and conditions and placing techniques to determine the optimum mix design and admixture dosage to meet specific requirements.

CONFLO BOND-UWA will not provide protection against washout in situations where there is a large amount of water turbulence such as where concrete is poured directly into water from a ready-mix truck or where incorrect use of a tremie produces interrupted concrete flow. In such situations water is forcibly mixed with the concrete.

CONFLO BOND-UWA is available in 4.5 kg bags.

CONFLO BOND-UWA has a minimum shelf life of 12 months provided the product is kept in a dry store in the original, unopened packaging.