

Placing techniques of underwater concrete

Excerpts from Concrete Society Technical Report No. 35 "Underwater Concreting":

Placing Techniques

It is not normal practice to vibrate concrete underwater, consequently an exceptionally high degree of workability is required so that the concrete will flow and self-compact.

The use of 'non-dispersible' concrete greatly reduces the risk of washout of fines.

Placing of non-dispersible concrete**General**

Non-dispersible concrete is a highly cohesive, water repellent material that can be allowed to freefall through water without segregation or washout of the cement.

Non-dispersible concrete may be modified by the inclusion of a suitable plasticizer to be **self-compacting** and to distribute itself within the formwork to a level homogenous mass, flowing around reinforcement or other inclusions.

The advantages of non-dispersible concrete for underwater work have been demonstrated in several construction projects, two of which are described in the References.

The Material

Non-dispersible properties can be achieved by the addition of proprietary admixtures based on cold-water soluble cellulose ether to conventional concrete.

The best method of placement in deep water is to use a tremmie pipe or concrete pump to place the concrete ideally allowing the end of the pipe to remain in the concrete at all times and only remove it to change positions. As the concrete is already fluid no compaction should be needed. Compaction by vibrator introduces more energy into the concrete and makes it more fluid and more likely to wash out.

If concrete must be placed by bucket then placing the bucket as close to the river bottom as possible is advised to reduce the amount of disturbance the concrete has before reaching its final position.

The thixotropic nature of the material means that washout is kept to a minimum however continual disturbance of the concrete will result in increased washout and segregation of the concrete.

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Health and Safety

*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

Spillage

Chemical products can cause damage; clean spillage immediately.