

STABILIZATION OF CONCRETE WASHWATER

DELVO® application

DESCRIPTION:

Note: The following discussion pertains to one application of DELVO® admixtures: overnight/weekend stabilization of concrete washwater.

OVERVIEW:

At the end of each day, when a 10 cubic yard (7.7 cubic meter) ready-mix truck returns to the plant with no leftover concrete, that truck will contain approximately 600 lb (365 kg) of cement, fine aggregate and coarse aggregate adhering to the inside of the truck drum. It is a common practice in the ready-mixed concrete industry to wash this residue out using approximately 150 to 300 gallons (570 to 1,140 liters) of water to thoroughly clean the inside of the truck drum.

Conventional methods for disposal of concrete washwater include dumping:

- At the jobsite
- At a landfill
- Into a reclaimer/recycler unit
- Into a concrete washwater pit
- In the ready-mix plant yard

The removal of hardened concrete washwater can result in expensive labor costs, excessive wear and tear on front-end loaders, and costly hauling and disposal charges. Ready-mix producers now have a cost-effective solution to the problem.

DELVO TECHNOLOGY:

Master Builders has a unique, cost-effective alternative to the disposal of concrete washwater called the DELVO Technology. The DELVO Technology is available as a liquid product called DELVO Stabilizer admixture or a dry product called DELVO ESC admixture.

DELVO Stabilizer or DELVO ESC admixtures, when added to plastic concrete or washwater, stop cement hydration by forming a protective barrier around cementitious particles. This barrier prevents portland cement, fly ash and granulated slag from achieving initial set.

TREATING CONCRETE WASHWATER:

DELVO Stabilizer or DELVO ESC admixtures can be used to stabilize concrete washwater in the drum of a ready-mix truck, on an overnight and weekend basis, and provides the following benefits:

- Reduces the amount of water needed to clean ready-mix truck drums
- Reduces concrete washwater disposal
- Reduces the need for concrete washwater pits, the resulting wear and tear on front-end loaders and hauling and disposal charges
- Reduces the labor costs of washing out trucks
- Acts as a cleansing agent to reduce concrete buildup on fins, thereby reducing maintenance costs incurred from chipping out hardened concrete
- Concrete containing stabilized washwater will experience strength performance equal to or greater than reference concrete without stabilized washwater
- May reduce material costs by allowing for a cement reduction of between 50 to 100 lb (23 to 45 kg) when a full 9 yd³ (7 m³) load is batched on top of the stabilized concrete washwater. **Note: Must be verified by performance tests.**
- Reduces environmental concerns pertaining to the disposal of concrete washwater

For overnight stabilization of concrete washwater use 32 to 64 fl oz (950 to 1,900 mL) of DELVO Stabilizer or 2 to 4 DELVO ESC pucks per truck. For weekend stabilization, use 64 to 96 fl oz (1,900 to 2,840 mL) of DELVO Stabilizer or 4 to 6 DELVO ESC pucks per truck.

When using Type III cement, use 48 to 80 fl oz (1,420 to 2,370 mL) of DELVO Stabilizer or 3 to 5 DELVO ESC pucks per truck for overnight stabilization of concrete washwater, and 80 to 112 fl oz (2,370 to 3,300 mL) or 5 to 7 DELVO ESC pucks per truck for weekend stabilization.

The stabilized concrete washwater is reused as mix water in the subsequent manufactured concrete either the next day or after a weekend. If weather conditions or scheduling problems do not permit the use of a ready-mix truck containing stabilized concrete, either the next day or after a weekend, the concrete washwater may be restabilized once before being used as mix water the following day.

Note: When subjected to ambient temperatures below freezing, the stabilized concrete washwater may freeze. If this occurs, add hot water to the truck and mix at agitation speed to melt the frozen material. The transfer of stabilized concrete washwater into one or more ready-mix trucks parked indoors, into a central holding vessel kept indoors or the use of water heaters will prevent the freezing of stabilized concrete washwater.

STABILIZATION PROCEDURE:

The procedure for overnight/weekend stabilization of concrete washwater is easy, but it is important that each step be correctly followed.

1. The ready-mix truck should be empty of any returned concrete. Add 35 to 70 gallons (130 to 265 liters) of water to the truck drum.
2. Pull under the batch plant or DELVO station and dispense 32 to 64 fl oz (950 to 1,900 mL) of DELVO Stabilizer or 2 to 4 DELVO ESC pucks into concrete washwater for overnight stabilization. For weekend stabilization, dispense 64 to 96 fl oz (1,900 to 2,840 mL) or 4 to 6 DELVO ESC pucks into the concrete washwater. Safety glasses or goggles must be worn when handling the DELVO Stabilizer.

Note: The DELVO Stabilizer can be added simultaneously with the water in step #1.

3. Return the stabilized concrete washwater to the front of the drum and mix at high speed for 1 minute.
4. Back up the stabilized concrete washwater quickly 3 to 4 times or as recommended to the rear of the drum creating a wave action for maximum fin cleaning.
5. Return the stabilized concrete washwater to the front of the drum and mix at high speed for 1 minute. During mixing, wash down the back rear fins with water from the truck hose (use no more than 5 gallons {19 liters}). This will loosen any build-up adhering to the back rear fins. Park the truck for the night or weekend leaving the safety hatch at the 3 or 9 o'clock position.
6. The next day or after a weekend, reduce the water content of the freshly manufactured concrete by the amount of water added in step #1 and #5.

PACKAGING:

DELVO Stabilizer is supplied in 55 U.S. gallon (208 liter) drums and bulk delivery. DELVO ESC admixture is supplied in 5-1/2 gallon (21 liter) pails, which contain 100 DELVO ESC pucks.

TEMPERATURE PRECAUTION:

Store the DELVO Stabilizer at 34 °F (1 °C) or above. If the DELVO Stabilizer has frozen, thaw at 34 °F (1 °C) or above and completely reconstitute by mild mechanical agitation. DO NOT use pressurized air for agitation. Store DELVO ESC pucks away from moisture.

SAFETY PRECAUTION:

In case the DELVO Stabilizer or DELVO ESC puck(s) comes into contact with eyes, skin or clothing, immediately flush with water (for skin, wash with soap and water) for 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Do not take internally. Keep product away from children at all times.

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