RESPONSIBLE WATER USAGE ON CONSTRUCTION SITES

PPC STRENGTH GUARANTEED

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RESPONSIBLE WATER USAGE ON CONSTRUCTION SITES

1. A prerequisite for understanding how to reduce water usage on construction sites is to have a clear understanding of where water is used, how much is used, where water is being wasted, and what behaviors and/or technologies can be introduced to successfully reduce water wastage.

2. Key water using processes on construction sites are considered to be:
   - Site cabins and temporary accommodation
   - General site activities including tool washing
   - Wet trades, such as brickwork, screeding, concreting and plastering
   - Water curing of plaster, screeds and concrete
   - Groundworks, including grouting and drilling Dust suppression, including road and wheel washing
   - Hydro-demolition
   - Cleaning of tools and plant equipment, truck washing
   - Commissioning and testing of building plant and services

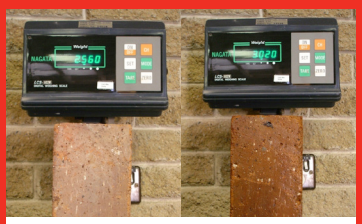
3. The first and immediate priority for reducing water use on construction sites is to eliminate water wastage. However, there is currently very limited information on the proportion of construction site water used for different activities and processes.A number of activities have been identified where it is thought the majority of water wastage occurs. These are:
   - General dust suppression, suppression on site roads and wheel washes
   - Hydro-demolition with high pressure water
   - Truck and transport system wash out
   - Wash out of ready mixed concrete trucks
   - Site and general cleaning
   - Specialist and high pressure cleaning
   - Commissioning plant and services

4. Reducing water use on construction sites will be successful only if the following challenges can be overcome:
   - Value for money; as water is a relatively 'cheap' resource, it is unlikely that the introduction of expensive processes on temporary construction sites would be viable
   - The work environment; any technology must be robust and able to stand up to the demands of construction sites
   - Habit Behavior; change is not a process that will happen overnight and therefore technological intervention, or technology that actively influences a behavior change (e.g. incorporation of trigger guns on all hoses) is likely to be more successful than purely behavioral interventions.
   - A mix of approaches is more likely to be successful than considering either behavior or technology in isolation.

5. The concrete industry should aim to use water efficiently and minimise the demand on mains water. The Readymix concrete industry promotes good practices including the use of admixtures in concrete production (which can reduce water consumption by up to 30%) and water recycling.

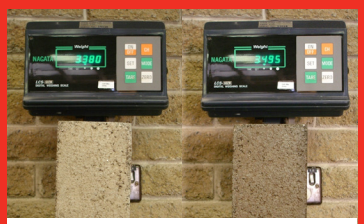
6. The use of water for curing plaster, screeds and concrete by spraying or ponding should be discouraged where alternative methods are available and appropriate.

7. The use of cement-bound bricks and blocks will reduce water consumption when building masonry walls. Cracking, debonding and shrinkage of mortars occurs when bricks are not wetted prior to laying. Cracking, debonding and shrinkage of plaster occurs when the substrate (brick masonry) is too dry. A clay brick can absorb approximately 400% more water than cement-bound brick.



0.45L WATER ABSORBED

Burnt clay brick is like a solid sponge. The pictures above show the mass of the same brick dry(LHS) and wet (RHS) after 30 minutes of soaking.



0.115L WATER ABSORBED

Concrete units are not as thirsty. The photos above show the same unit before and after soaking for 30 minutes.

Think of each brick soaking up or "stealing" 500mℓ of water from the mortar.

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RESPONSIBLE WATER USAGE ON CONSTRUCTION SITES Q&A

Q: Do I need to use potable water for mixing concrete, mortar, etc.?
A: Not necessarily – Cement is reasonably tolerant of the quality of mixing water. However some contaminants may cause problems with setting time, corrosion of reinforcement or long term durability. Recommended limits for contaminants are given in the South African National Standard for mixing water for concrete, SANS 51008.

Q: How can I cure concrete if I can't use municipal water?
A: You can use non-potable water, or you can use a good quality curing compound applied by spray or roller. Acrylic based curing compounds can be used on plaster or other surfaces requiring painting or rendering. In the case of columns, they can be tightly wrapped in plastic following stripping of the formwork.

Q: Can the wash water from my concrete mixers and Readymix trucks be re-used?
A: Yes, The water can be drained to settlement tanks or pits and the water can be reused as mixing water subject to the provisions of SANS 51008. If the water is too contaminated, it can be used for dust suppression or washing of vehicle wheels before they leave site.

Q: How can I wash vehicle wheels more efficiently as the vehicles leave site?
A: Construct shallow water troughs through which the vehicles must drive, and when the water becomes too dirty, use it for dust suppression.

Q: Can I save water using chemical admixtures?
A: Yes, depending on the type and dosage of the admixture you may be able to reduce the water content of your concrete between 5 to 30%.

Q: Can I save water by changing my mix designs?
A: Sometimes yes, use the largest practicable size coarse aggregate and a low water demand fine aggregate if available, or try a blend of available sands.

Q: What are alternative could be used for dust suppression?
A: Lignin-based dust suppressors are available. Although the initial application contains water, the Wsuppression of dust is more effective and lasts longer.

Q: What alternative demolition system could I use?
A: Use wire-rope cutters or mechanical impactors.

Q: How can I save water when cleaning tools on site?
A: First clean most adhering materials mechanically, then use a bucket filled with water and wet rags.

For more information or advice contact PPC Cement on 0800 236 368

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