PRODUCT BROCHURE

CONCRETE

Ultra series™

ULTRA FIBRE CONCRETE

Polypropylene Fibre Reinforced Concrete to meet the demands of modern concrete requirements

LAFARGE
Building better cities™

DESCRIPTION

Ultra Fibre Concrete is Lafarge's polypropylene micro fibre reinforced readymix concrete. It turns concrete into a composite material that slows crack propagation and reduces Plastic shrinkage cracking. Impact and wear-resistance can also be enhanced.

WHERE TO USE

Lafarge developed Ultra Fibre Concrete to meet the increasing demand for quality crack-free concrete. Ultra Fibre Concrete can be used in all types of concrete, including Artevia™ to achieve enhanced quality concrete with any finish.

Main uses are:

- Driveways
- Pathways
- Floors (Industrial, commercial or domestic)
- Precast elements
- Cold Room Floors
- Very thin sections with large surface-to-thickness ratios
- Any other concrete application where enhanced properties are required.

ADVANTAGES OF ULTRA FIBRE CONCRETE

- Homogeneous reinforcing, reducing possibility of spalling of concrete edges
- Simplifies the construction process
- Reduces labour required to place the handle plastic shrinkage control mesh
- Easier construction method and only one concrete application saves time
- Improves the wet mix by reducing the potential for concrete segregation
- Reduces the overall bleed and consequential settlement cracking
- Inhibits early plastic shrinkage cracking
- Increases the cohesiveness of the concrete

LIMITATIONS OF ULTRA FIBRE CONCRETE

Ultra Fibre Concrete does not replace any structural steel reinforcing. Please consult the design engineer regarding the intended purpose of steel mesh before dispensing with its use in any element or structure.

GUIDELINES FOR USING ULTRA FIBRE CONCRETE

Polyproylene micro fibres are added to the concrete mixing drum during the batching process of all raw materials. Dependent on the predetermined concrete mix design, there are two dosage rates used in a typical concrete mix: either 600g or 900g per cubic meter.

EFFECTS OF MICRO FIBRES ON THE PLASTIC STATE PROPERTIES OF CONCRETE

Slump:

The slump of the concrete will be reduced by about 10%. However, this does not Indicate a reduction in workability. The reason for the reduced slump is that the fibres create a desirable thixotropic effect, which will affect a static test such as that for the slump test. Energising concrete with a vibrator will overcome the apparent slump loss.

Bleed:

Settlement of concrete is reduced as a result of a reduction in bleed water. Tests on micro fibre Concrete show a reduction in bleeding from 5.8% to 4.9%. Settling occurs when the concrete changes from a plastic to solid material. During this process, the concrete is particularly prone to cracking.

EFFECTS OF MICRO FIBRES ON THE HARDENED STATE OF CONCRETE

- Drastically reduces the potential for plastic shrinkage cracking to occur by constantly redirecting micro cracks each time a fibre filament is encountered.
- Reduces the permeability of concrete through the reduction in bleed water, which reduces the development of capillary pores associated with bleed water. This reduction of pores also decreases the absorption properties and sustainability.
- Greater impact resistance: Impact damage is common in concrete, particularly at the surface and edges of elements and saw cuts. Micro fibres reduce the spalling of the concrete by providing secondary reinforcing.
- Improved abrasion resistance. As micro fibres control bleed water migration, the possibility of the fine cement and sand particles segregating from the mix is drastically reduced. This promotesan efficient hydration of cement which improves the bonding of the cement matrix and achieves a tougher more durable concrete surface
- Improved freeze thaw resistance. The ability of the concrete to take up water is reduced as a consequence of the lower permeability and absorptivily associated with reduced bleeding. Any water that is taken up and freezes will generate tensile force as it expands. These expansion forces are resisted by the micro fibres in the concrete.

MINIMUM STANDARDS FOR ULTRA FIBRE CONCRETE

Grade of concrete:	10MPa minimum
Cement type:	Any combination including slag and fly ash extenders
Aggregate size:	Any aggregate size as long as the nominal size is not greater than 25% of the thinnest section
Slump Range:	50mm – 120mm

Consult the Lafarge Technical Department for special applications and mix designs

IMPORTANT RECOMENDATIONS

The standard rules for good concrete practice and placing must be strictly observed with proper curing procedures as required by normal concrete mixes.

TYPE OF FIBRE

Fibre Concrete is most commonly available with: Polypropylene Micro Fibres
Colour: White
Size: Each filament is +/- 25 microns thick and 12 mm long

COVERAGE

One cubic meter of Ultra Fibre Concrete will cover an area of 10 square meters at a 100mm thickness.

SAFETY PRECAUTIONS

The use of safety goggles and gloves is recommended when placing concrete. Refer to MSDS for additional information on the special admixture.

FIRST AID

EYES: Immediately flush eyes, including under lids, with water for at least 15 minutes to remove all particles. If necessary, seek medical advice.

SKIN: Wash skin with cold water and a pH neutral soap as soon as possible, except where open wounds are visible. Attention should be paid to wounds and fresh scars which should be covered with protective paraffin gauze. Seek medical help in cases of prolonged contact with wet concrete.

INGESTION: Rinse mouth with clean water. If swallowing has occurred drink plenty of milk or water. Do not induce vomiting. Seek medical attention immediately.

INHALATION: Remove to fresh air. If symptoms persist seek medical attention.

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