PRODUCT INFORMATION SHEET

AALBORG EXTREME™ LIGHT 120
Premixed High-Performance Concrete

**AALBORG EXTREME™ LIGHT120** is a shrinkage reduced, ready-to-use, self-compacting High-Performance Concrete for the manufacturing of thin/slim concrete products with high aesthetic, mechanical and durability performance. Binder, admixtures and aggregates are included, only water should be added during mixing. The Portland Cement Association defines Ultra-High-Performance Concrete as having a minimum compressive strength of 120 MPa (17,000 psi). This document uses the terms Ultra High-Performance and High-Performance Concrete interchangeably when describing AALBORG EXTREME™ Light 120.

After mixing with water, AALBORG EXTREME™ Light 120 yields a white Ultra-High-Performance Concrete that can readily be pigmented. Due to its high flowability, fibers can be added to enhance mechanical properties, whilst still maintaining self-compacting properties.

**Applications**
- Light weight high strength panels: façades, cladding, sun-screens, ornamental elements.
- Architectural and ornamental elements made in concrete.
- Tiles, copings and Masonry building components
- Architectural and structural cast-in-place elements

**Mixing Instructions**

One 25 kg (55 pound) bag of AALBORG EXTREME™ Light 120 is mixed with 1.95-2.05 kg (4.3-4.5 pounds) water to produce approx. 11.1 liters (0.4 cubic feet) of High-Performance Concrete.

A mixing time of 8 minutes, in a planetary-type mortar or pan-type concrete mixer, is preferred. This may be reduced in high efficiency mixers upon auto-control for benchmark against selected technical properties listed in “Technical properties of the product”.

Pigments when added to the mix should be combined and mixed with AALBORG EXTREME™ Light 120 before adding water. Thereafter, follow recommended mixing procedure above.

Fibers if added should be dosed after it has achieved a highly flowable plastic state and mixed, so the fiber is evenly distributed throughout the mix before discharging.
Technical Properties of the Product  
(water dosage 2.0 kg per 25 kg premix / 4.4 lbs per 55.1 lb premix)

<table>
<thead>
<tr>
<th>Property and Test Method</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fresh State</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Flow per ASTM C1437(^1) [constant value initial, 30 &amp; 45 min]</td>
<td>cm (inches)</td>
<td>29 ± 2 (11 ± 1)</td>
</tr>
<tr>
<td>• Flow per ASTM C1611 [constant value initial, 30 &amp; 45 min]</td>
<td>cm (inches)</td>
<td>&gt; 90 (&gt; 35)</td>
</tr>
<tr>
<td>• Air content per ASTM C173 / ASTM C231</td>
<td>% by volume</td>
<td>&lt; 2</td>
</tr>
<tr>
<td>• Density, Unit Weight per ASTM C138</td>
<td>kg/m(^3) (lb/ft(^3))</td>
<td>2,425 (151.4)</td>
</tr>
<tr>
<td>• Aggregate, 90% passes sieve size</td>
<td>mm (inches)</td>
<td>3 (#8)</td>
</tr>
<tr>
<td><strong>Hardened State</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Hydraulic shrinkage, EN 12617-4 (40x40x160mm) 90 days</td>
<td>µm/m</td>
<td>&lt; 600</td>
</tr>
<tr>
<td>• Initial Time of Setting, ASTM C403</td>
<td>hours</td>
<td>6.5 – 7.5</td>
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<tr>
<td><strong>Mechanical Properties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Compressive Strength, EN 196-1, 40x40x160mm 1-Day 28-Days</td>
<td>MPa</td>
<td>&gt; 75</td>
</tr>
<tr>
<td>• Compressive Strength, diam. 150/300mm cylinder 1-Day 28-Days</td>
<td>MPa</td>
<td>&gt; 75</td>
</tr>
<tr>
<td>• E-modulus, EN 12390-13 28-Days</td>
<td>GPa</td>
<td>&gt; 50</td>
</tr>
<tr>
<td>• Flexural strength, EN 12390-5, 100x100x500mm 28-Days</td>
<td>MPa</td>
<td>&gt; 14</td>
</tr>
<tr>
<td><strong>Durability Properties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chloride content, excluding Cl from mixing water</td>
<td>% by weight</td>
<td>&lt; 0.09</td>
</tr>
<tr>
<td>• Water soluble equivalent alkali content (Na(_2)O + 0.658K(_2)O)</td>
<td>%</td>
<td>0.14</td>
</tr>
<tr>
<td>• Chloride Migration, NT Build 492 28-Days</td>
<td>(x 10^{-12} \text{m}^2/\text{s})</td>
<td>0.35</td>
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<tr>
<td></td>
<td>56-Days</td>
<td></td>
</tr>
<tr>
<td>• Freeze/Thaw Resistance – Scaling, EN 12390-9</td>
<td></td>
<td>In progress</td>
</tr>
<tr>
<td>• Water absorption, EN 1015-18</td>
<td>kg/((\text{m}^2 \cdot \text{min}^{0.5}))</td>
<td>&lt; 0.02 (Wc2)</td>
</tr>
</tbody>
</table>

\(^1\) No shock or vibration applied to the flow table
Recommendations for its use:

Trial Casting
AALBORG EXTREME™ Light 120 is a highly engineered pre-blended product. The recommendations & information presented are based on laboratory tests with the recommended water addition. Run trials before production is initiated to confirm desired physical properties using the equipment and conditions that will be encountered during production.

Pre-production trials are particularly relevant if fibers are added to the concrete, leading to progressive reduction in flow and increase in viscosity. Trials will determine if vibration is necessary to reach the targeted finish. Only external vibration is recommended.

Trials
Users of AALBORG EXTREME™ Light 120 shall implement adequate quality control testing to monitor the quality and “Technical Properties of the Product”.

User testing to include:
- Water dose control
- Flow
- Air content
- Compressive strength

Curing
Due to the low water content in high and ultra-high-performance concretes, it is recommended to protect the concrete from evaporation (e.g. covering with plastic sheet) immediately after casting. If the exposed surface needs to be finished after casting protect the placed concrete from evaporation in between concrete placement and finishing operations.

Protect surface from evaporation for at least 24 hours. Do not wet cure, shelter from wind, rain, and dew during the first seven days after casting. No heat curing is needed.

Technology:
In the 1980s, the laboratories of AALBORG PORTLAND A/S in Denmark, conducted pioneering research to develop very dense cement-based binder-matrices, in order to fully exploit the performance of concrete. These efforts resulted in the first ever patented ultra-high-performance steel fiber reinforced concrete – bearing the name Compact Reinforced Composite, CRC®. This technology was, and is today, based on AALBORG WHITE® cement, which offers perfectly suited chemistry and purity, as well as superior mechanical performance.

Cementir Holding’s Innovation Team within Aalborg INWHITE SOLUTION™ is again taking the lead to bring architectural concrete to a new level. We are applying our expertise from the Research & Quality Centre in Aalborg, Denmark to address market/customer needs. AALBORG EXTREME™ Light 120 has been designed to accurately suit the production demands and requirements of our customers. Our global Sales Team offers it as the next step in the development of complex binder technologies that deliver user friendly ultra-high-performance in concrete.

AALBORG EXTREME™ Light 120 is based on Cementir Holdings recently patented binder technology, FUTURECEM™. It offers highly advantageous pozzolanic reactions, without being constrained by the availability or quality of waste materials from other industries.
Storage of the product:
AALBORG EXTREME™ Light 120 can be stored indoors in unopened bags and dry conditions for up to 12 months from the production date.

Packaging: AALBORG EXTREME™ Light 120 is available in 25 kg (55.1 lb) bags.

Cautions:
Read and understand product Safety Data Sheets prior to use or handling. AALBORG EXTREME™ Light 120 contains portland cement. Use appropriate personal protective equipment and follow precautions listed in product Safety Data Sheets.
- Avoid breathing dust.
- May cause irritation to eyes and skin. Prevent contact with eyes or prolonged contact with skin. Thoroughly flush with water in case of contact.
- Do not ingest.
- Keep out of reach of children.

Quality Control Assessment:
AALBORG EXTREME™ Light 120 is produced under the strict quality control procedures defined, audited and quality tested by Cementir Holding at our Research and Quality Centre in Denmark.

Sustainability:
AALBORG EXTREME™ Light 120 is manufactured with readily abundant raw materials and is not constrained by the quality or availability of waste materials from other industries.

Contacts:
AALBORG EXTREME™ Light 120 is produced using cutting edge material technology. We welcome user feedback, technical insights and application recommendations.

AALBORG EXTREME™ Light 120 is distributed in North America by Lehigh White Cement Company
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