Superplasticizer based on modified active polymers for concrete with low water-cement ratio and very long slump retention

DESCRIPTION
Dynamon SX T3 is an admixture based on modified active polymers for concrete, belonging to the new revolutionary MAPEI Dynamon SX system.

The Dynamon SX system is based on DPP (Designed Performance Polymer) technology; a new chemical process that can model the admixture’s properties in relation to the specific performances required for concrete. This process is developed by a complete design of the raw materials.

WHERE TO USE
Concretes manufactured with Dynamon SX T3 have a high level of workability (consistency class S4 or S5, according to EN 206-1), and are consequently easy to apply when fresh. At the same time they offer excellent mechanical performances when hardened.

Dynamon SX T3 is an admixture with superior performance in comparison to traditional superplasticizers (in terms of water reduction and slump retention).

Dynamon SX T3 is especially suitable for all applications where there is the need for a greater water reduction, along with very long slump retention in different consistency classes.

The main applications of Dynamon SX T3 are the production of concretes:

- with high mechanical performance and very long maintenance of consistency class;
- for waterproof and durable structures, according to the exposure classes of EN 206-1;
- with a characteristic strength class (R_{ck}) in the range 25-50 N/mm².

TECHNICAL CHARACTERISTICS
Dynamon SX T3 is a water solution containing 45% active modified polymers. The polymers efficiently disperse the cement grains and facilitate a slow development of the first products deriving from the cement hydration.

It is possible to use the dispersing action of Dynamon SX T3 in the following three advantageous ways:

a) to reduce the amount of water but with the same workability. In this way it is possible to increase the mechanical strength, to reduce the permeability and increase the durability;

b) to increase workability with the same water-cement ratio;
TECHNICAL DATA (typical values)

<table>
<thead>
<tr>
<th>PRODUCT IDENTITY</th>
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<tbody>
<tr>
<td>Consistency:</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour:</td>
<td>brown</td>
</tr>
<tr>
<td>Density according to ISO 758 (g/cm³):</td>
<td>1.22 ± 0.03 at +20°C</td>
</tr>
<tr>
<td>Dry content according to EN 480-8 (%):</td>
<td>45 ± 2.3</td>
</tr>
<tr>
<td>Principal action:</td>
<td>increase workability and/or reduction of mixing water and slump retention over long periods</td>
</tr>
<tr>
<td>Classification according to EN 934-2:</td>
<td>set retarding, high range water reducing superplasticizer, tables 11.1 and 11.2</td>
</tr>
<tr>
<td>Chlorides soluble in water according to EN 480-10 (%):</td>
<td>&lt; 0.1 (absent according to EN 934-2)</td>
</tr>
<tr>
<td>Alkali content (Na₂O equivalent) according to EN 480-12 (%):</td>
<td>&lt; 6.0</td>
</tr>
<tr>
<td>pH according to ISO 4316:</td>
<td>6.5 ± 1</td>
</tr>
<tr>
<td>Storage:</td>
<td>12 months, protect from frost</td>
</tr>
<tr>
<td>Hazard classification according to EC 1999/45:</td>
<td>none. Before using refer to the “Safety instructions for preparation and application” paragraph and the information on the packaging and Safety Data Sheet</td>
</tr>
<tr>
<td>Customs class:</td>
<td>3824 40 00</td>
</tr>
</tbody>
</table>

c) to reduce both water and cement at the same water-cement ratio and the same workability. In this case technical advantages are obtained due to the lower hydraulic shrinkage, the lower creep and the lower development of heat of hydration. This last characteristic is particularly important for concrete with a high cement factor (> 350 kg/m³).

APPLICATION PROCEDURE
Dynamon SX T3 develops maximum dispersing action when added after the other ingredients (cement, aggregates, and at least 80% of the mixing water).

COMPATIBILITY WITH OTHER PRODUCTS
Dynamon SX T3 admixture is compatible with other products for preparing special concretes, especially with:
- Mapeplast SF, silica fume based powder admixture for manufacturing “top-quality” concrete (strength, impermeability, durability);
- Expancrete, expansive agent for manufacturing shrinkage compensated concrete;
- fly ash for manufacturing standard concrete;
- DMA 1000, DMA 2000, or DMA 3000 Form-Release Agents, for releasing concrete from formworks;
- Mapecure E and Mapecure S curing emulsions to protect form-released concrete structures from rapid water evaporation.

Our technical assistance department is available to evaluate which admixture is the most suitable to manufacture freeze/thaw cycles resistant concretes, depending on the type of cement used.

CONSUMPTION
Dosage by volume: From 0.5 to 2 l per 100 kg of cement.
PACKAGING
Dynamon SX T3 is available in bulk, 200 l drums, 1000 l tanks.

STORAGE
Dynamon SX T3 can be stored for 12 months, in sealed containers protected from frost. Exposure to direct sunlight can produce colour variations without altering in any way the performance of the product.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION
Dynamon SX T3 is not hazardous according to the current European standards on the classification of preparations. It is recommended to wear gloves and protective goggles and to take the usual precautions for handling chemical products. The Safety Data Sheet is available on request for professional users.

WARNING
Although the technical details and recommendations contained in this product report correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical applications: for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application: in every case, the user alone is fully responsible for any consequences deriving from the use of the product.

All relevant references for the product are available upon request and from www.mapei.com