

MasterSure HES I540

Second generation high range water reducing/superplasticizer admixture for concrete with extended consistence retention and low W/C ratio for precast concrete industry.

Material description

MasterSure HES I540 (High Early Strength) is an innovative second generation superplasticizer of polycarboxylic ether (PCE) polymers with good water reduction and extended consistency retention dedicated to precast concrete where high early strengths are needed in order to speed up the precast operation of demoulding and moving of the elements to the stocking area. The fresh concrete shows no segregation and at the same time has a low water cement ratio and, consequently, high early and long term strengths as per EN 206-1 and UNI 11104 standards.

MasterSure HES I540 is chloride free, meets UNI EN 934-2 and it is compatible with all cements meeting the EN 197-1 standards.

The new chemistry of MasterSure HES

MasterSure HES I540 is an innovative line of superplasticizer based on a unique blend of state of the art polymers of Master Builders Solutions research laboratory. The polymer system present in MasterSure HES are studied in order to be slowly release in the basic conditions of the cement paste at the very early hydration process and to be gradually adsorbed onto adsorption onto the cement particles partially hydrated and disperses them efficiently over a long period of time. This means that the slump retention can be quite long (60 – 90 minutes) depending on the dosage that can be modulated on requirements. MasterSure HES molecules leave sufficient surface of the cement exposed to allow contact with water for a rapid hydration reaction which results in high early strength development.

Features and benefits

MasterSure HES I540 offers the following benefit for the precast concrete industry to:

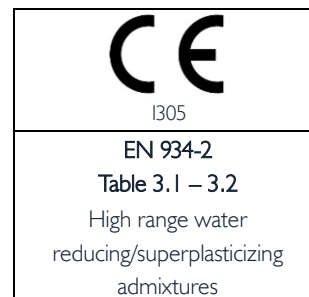
- produce rheoplastic or Smart Dynamic Concrete having a low water cement ratio;
- extended the consistence retention of concrete the time required for the pouring of the precasted elements;
- obtain high early strength development also at the very early

curing ages;

- produce durable precast concrete elements as per EN 206-1.

As compared to the traditional superplasticizers, the engineering properties such as early and ultimate compressive and flexural strengths, bond to steel, and modulus of elasticity, shrinkage, creep, and impermeability are improved.

In compliance with the European Regulation (EU No 305/2011 and EU No. 574/2014) the product is provided with the CE marking according to UNI EN 934-2 and the relative DoP (Declaration of Performance).



Dosage

MasterSure HES I540 The recommended dosage rate range is 0.8 to 1.4 litres per 100 kg of binder.

Other dosages may be recommended in special cases according to specific job site conditions.

In such cases please consult our Technical Service Department for advice.

Packaging

MasterSure HES I540 is available in 10L cans, 1.000L container or in bulk.

Storage

MasterSure HES I540 must be stored in a place where the temperature does not drop below 5°C.

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Technical Information	
Form	Liquid
Relative density (g/cc at 20°C)	1.040 – 1.080
Essential characteristic in accordance to EN 934-2	Performance
Chloride ion content	≤ 0.1% by mass
Alkali content (Na ₂ O equivalent)	≤ 2.5%
Corrosion behaviour	Contains component from EN 934-1: 2008 Annex A.2
Hardening time/strength development	Equal consistence: 24h ≥ 140% 28 days ≥ 115% Equal w/c ratio: 28 days ≥ 90%
Air content	Equal consistence: ≤ 2.0 % Equal w/c ratio: ≤ 2.0 %
Water reduction	≥ 12%
Consistency	Increase: ≥ 120 mm Retention: comply 3.2 (2)

Directions for use

MasterSure HES I540 is a liquid admixture to be added to the concrete during the mixing process:

- mix cement and secondary binders, sand, coarse aggregates and the mix water until a stiff, yet homogeneous, mixture is obtained;
- optimal mixing water reduction is obtained if MasterSure HES I540 is mixed into the concrete right after the addition of the initial 80-90% of the total water;
- avoid adding the admixture to the dry aggregates;
- add MasterSure HES I540 admixture and mix again for to 60 seconds in order to disperse it homogeneously;
- continue mixing until required workability is obtained, with addition of the remaining water.

Compatibility

In order to optimise some special properties of the concrete, use of the following complementary admixtures is suggested:

- MasterMatrix SDC 150 to produce a Smart Dynamic Concrete;
- silica fume, MasterLife MS 610, for high performance concrete and increased durability in chemical aggressive environments (exposure class XA1 to XA3, EN 206-1);
- demoulding agent for MasterFinish line for to help remove formwork and to improve the architectural finish.

MasterSure HES I540 is not compatible with all admixtures of MasterRheobuild series.

Safety instructions

For information on the correct and safe use, transport, storage and disposal of the product, consult the most recent Safety Data Sheet.



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Other services

For additional technical information, brochures, references, technical reports and technical support please visit www.master-builders-solutions.com/it-it or alternatively contact infomac@masterbuilders.com.

Scan QR code to visit the product page and download the latest version of this technical data sheet and any additional documentation.



Disclaimer

Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.

For further information, please consult the local Technician of Master Builders Solutions. The technical advice on how to use our products, either written or verbally given, are based on the current state of our scientific and practical expertise, and does not imply the assumption of any guarantee and/or responsibility for the final results of works executed using our products.

Therefore, the customer is not exempted from the exclusive task and responsibility of verifying the suitability of our products for the intended use and purposes.

This version supersedes all the previous ones.

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