MasterLife CI 35

Corrosion-inhibiting admixture for steel reinforced concrete.

Material description

MasterLife CI 35 is a ready to use admixture based on calcium nitrate, that performs as corrosion inhibiting admixture in steel reinforced concrete.

MasterLife CI 35 admixture is chloride free, meets EN 934-2 and it is compatible with all cements meeting the EN 197-1 standards.

Fields of application

MasterLife CI 35 admixture will effectively inhibit corrosion in all types of steel reinforced concrete including precast / prestressed and post-tensioned applications.
MasterLife CI 35 admixture is recommended for use in parking garages, bridge decks, marine structures, slabs, floors, and other reinforced concrete applications requiring corrosion protection against chlorides from deicing salts or marine exposure.
MasterLife CI 35 admixture will also inhibit the potentially corrosive effects of chloride-bearing concrete-making ingredients.

Benefits

MasterLife CI 35 admixture is a corrosion inhibitor that provides basic corrosion protection for steel reinforced concrete structures.

- Provides effective corrosion protection against chlorides in concrete.
- Extends the service life of reinforced concrete structures.
- Set acceleration, which may be desirable in cold weather applications.

Mechanism of action

In the alkaline environment of concrete, a natural passive ferric oxide layer forms on the surface of embedded reinforcing steel and protects the steel from corrosion. This passive oxide layer may break down in the presence of chlorides and moisture resulting in corrosion of the steel. MasterLife CI 35 admixture delays corrosion by re-passivating defects on the steel surface. These defects are ferrous oxide ions that are susceptible to chloride attack. When chloride ions attack the ferrous ions, they combine to create a ferrous chloride complex (rust) and initiate pitting corrosion on the reinforcing steel. If untreated, chloride ions continue to attack newly exposed ferrous ions and form additional expansive corrosion products leading to staining, cracking and spalling of the concrete.
Nitrate ions contained in MasterLife CI 35 admixture are effective in preventing ferrous chloride complex formation by reacting with defective ferrous oxide ions prior to chloride attack and reforming the passive layer.
Nitrate ions surround the defective ferrous oxide ion and convert it to a more stable ferric ion species less susceptible to corrosion.
This oxidation reaction serves to re-passivate the reinforcing steel and re-establish the barrier between the steel and chlorides that initiate corrosion.
MasterLife CI 35 admixture contains a minimum of 45% calcium nitrate by mass as an active ingredient. MasterLife CI 35 mechanism of action is very similar to other commercially available solution of calcium nitrite corrosion-inhibiting admixtures and at equal dosage rates, provides similar or even better performance and corrosion protection.

Compatibility

MasterLife CI 35 is compatible with most admixtures, particularly with MasterRheobuild, MasterGlenium, MasterEase or MasterCO_2re and should always be used together with MasterRheobuild, MasterGlenium, MasterEase or MasterCO_2re to reduce the water-cement ratio.

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

- air entraining agent MasterAir to improve freeze thaw resistance (exposure class XF1 to XF4, EN 206);
- silica fume, MasterLife MS 610, for high performance concrete and increased durability in chemical aggressive environments (exposure class XA1 to XA3, EN 206);

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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).

CE 1305
EN 934-2 Table 7 Hardening accelerating admixtures

Dosage

MasterLife CI 35 is recommended for use at a rate of 5.0 to 30.0 L/m³ of concrete, depending upon the severity of the corrosion environment.
Master Builders Solutions recommends that steel reinforced concrete structures that will be exposed to chlorides in service should be designed in accordance with ACI 318, ACI 357, CSA, AASHTO or other applicable codes.
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.
Chloride protection limits for MasterLife CI 35 are as given in the dosage table below reported:

	Chloride protection limit kg/m³	
MasterLife CI 35 dosage l/m³	with chloride bearing materials	all other applications
5	1.2	--
10	2.4	3.6
15	3.6	5.9
20	4.8	7.7
25	6.0	8.9
30	7.2	9.5

Packaging and storage

MasterLife CI 35 is supplied in 10L cans, 208L drums, 1.000L tanks or in bulk.
MasterLife CI 35 can be stored at temperatures between –12° to 50°C. If MasterLife CI 35 admixture freezes, it can be fully reconstituted by thawing and mechanical agitation. Do not use pressurized air for agitation.

Technical Information	
Form	Liquid
Relative density (g/cc at 20°C)	1.460 - 1.500
Essential characteristic in accordance to EN 934-2	**Performance**
Chloride ion content	≤ 0.1% by mass
Alkali content (Na_2O equivalent)	≤ 2.0%
Corrosion behaviour	Contains components from EN 934-1 2008 Annex A.2
Air content	≤ 2.0 %
Hardening time/ strength development	20°C 24h ≥ 120% 20°C 28gg ≥ 90% 5°C 48h ≥ 130%

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Directions for use

MasterLife CI 35 can 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 admixture of MasterGlenium, MasterEase or MasterCO$_2$re line and MasterLife CI 35 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 MasterLife CI 35 and MasterGlenium, MasterEase or MasterCO$_2$re 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.

Concrete setting time

Concrete setting times may be accelerated with the use of MasterLife CI 35 admixture, especially at low temperature.

Safety instruction

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

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

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