

# 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.

## Areas 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<sub>2</sub>re and should always be used together with MasterRheobuild, MasterGlenium, MasterEase or MasterCO<sub>2</sub>re 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 206-1);

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- Silica fume, MasterLife MS 610, for high performance concrete and increased durability in chemical aggressive environments (expo-sure class XA1 to XA3, EN 206-1);

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

MasterLife CI 35 is recommended for use at a rate of 5.0 to 30.0 L/m<sup>3</sup> 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:

MasterLife CI 35 dosage l/m <sup>3</sup>	Chloride protection limit kg/m <sup>3</sup>	
	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

## 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 MasterGlenium SKY 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 SKY 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.

## Packaging

MasterLife CI 35 is supplied in 10L cans, 208L drums, 1.000L tanks or in bulk.

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Product Data	
Form	Liquid
Relative density (g/cc at 20°C)	1.460 - 1.500
Chloride ion content	≤ 0.1% by mass
Alkali content (Na <sub>2</sub> O 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%
Logistics	
Shelf life:	12 months if stored according to manufacturer's instructions in unopened container.
Storage conditions:	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
Handling and transportation:	Refer to MasterLife CI 35 Safety Data Sheet
Disposal:	Refer to MasterLife CI 35 Safety Data Sheet

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## DISCLAIMER

MasterLife CI 35, Master Builders Solutions UK Ltd, Version I

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

**Health and Safety:** \*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

**Spillage:** Chemical products can cause damage; clean spillage immediately.

### DISCLAIMER:

"Master Builders Solutions UK Ltd" (the Company) endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, the Company has no control over the selection of its products for particular applications. It is important that any prospective customer, user or specifier, satisfies him/her-self that the product is suitable for the specific application. In this process, due regard should be taken of the nature and composition of the background/base and the ambient conditions both at the time of laying/applying/installing the material and when the completed work is to be brought into use. Accordingly, no liability will be accepted by the Company for the selection, by others, of a product, which is inappropriate to a particular application. Products are sold subject to the Company's standard conditions of sale and all customers, users and specifiers, should ensure that they examine the Company's latest Product Literature.



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EN 934-2: T3.1 & T3.2

Declaration of Performance can be found at:  
[www.master-builders-solutions.com/en-gb](http://www.master-builders-solutions.com/en-gb)

