

SYNCHRO[®] 205



Chromium (VI) Reducing Additives

Product Description

SYNCHRO[®]205 is a liquid additive that has been formulated using Tin II (stannous) sulphate in combination with a chelating agent.

Physical Properties

Product Characteristics	
SYNCHRO [®] 205	
Appearance	Yellowish liquid
Density (g/l)	1300-1400
% Stannous Sulphate	24.0 - 26.0
pH	9,5-11,5
Freezing Point	Approx. -5° C
Chloride Ion	< 0.1 %

Product Uses

SYNCHRO 205 is used to reduce the level of soluble chromium (VI) ions present when cement is mixed with water. SYNCHRO 205 is a modification of SYNCHRO 200 / SYNCHRO 201 designed to provide lower treatment cost under less demanding conditions.

Advantages

- Highly concentrated flowable liquid additive
- Easy to use and dispense (no capital expenditure at the cement plant)
- No risk of cement brown staining
- Fully compatible with other cement additives and concrete admixtures
- Extended, predictable storage life for treated cement (up to six months)
- Satisfies cement shelf life requirements at low active reducing agent dosage

Product Function

Cement raw materials contain trace quantities of chromium. Cement clinker can contain some 100–300ppm of chromium. In the oxidizing and alkaline burning conditions of the cement kiln, some of this can be oxidised to chromium (VI), resulting in levels of up to 30ppm, with the majority between 5 and 15ppm in cement. This is classified as toxic and can cause skin irritation and allergic eczema in few cases amongst masons and workers.

EU Directive 2003/53/EC for chromium reduction became effective in January of 2005. This directive limits the watersoluble chromium content of cement to below 2ppm. Compliance with the Directive appears relevant to all cement manufacturers, and formulators/suppliers of cement-based preparations that produce or import such products into the EEA.

SYNCHRO 205 acts to reduce the soluble hexavalent chromium in aqueous cementitious systems to chromium (III), which forms an insoluble salt (a stable complex) that precipitates.

Compared to alternative chemistries such as ferrous sulfate, tin II (stannous) sulfate is significantly more effective at low dosage. Moreover, the SYNCHRO technology has been found to maintain its effectiveness significantly longer (up to six months) once it is added to cement.

This better stability provides cement manufacturers with a higher level of confidence against the loss of effectiveness that can occur with the long storage of, for instance, bagged cement.



Addition Rate

SYNCHRO 205 has a linear dose response from 2-20 ppm of chromium (VI). Typical dose for 5 ppm chromium (VI) is between 100 and 250 ppm (100 to 250g/t of cement) and for 10 ppm of chromium (VI) is between 200 and 500 ppm (200 to 500g/t of cement). Actual dose will depend on the point of addition, the desired cement shelf-life and on cement grinding and storage conditions.

Cement Shelf-Life

Chromium (VI) levels of ≤ 2 ppm have been maintained for well over 3 months in cements treated with SYNCHRO 205. Storage stability at different plants depends on milling and storage conditions.

Compatibility with Other Admixtures

The use of SYNCHRO 205 does not influence the performance of cement, mortar or concrete and is compatible with commonly used cement additives and concrete admixtures.

Dosing Equipment and Storage

See GCP's recommended system configuration and materials of construction. SYNCHRO 205 needs to be protected from exposure to temperatures below 0 °C to avoid freezing. It will freeze at approximately -5 °C but will return to full functionality after thawing and thorough mechanical.

Packaging

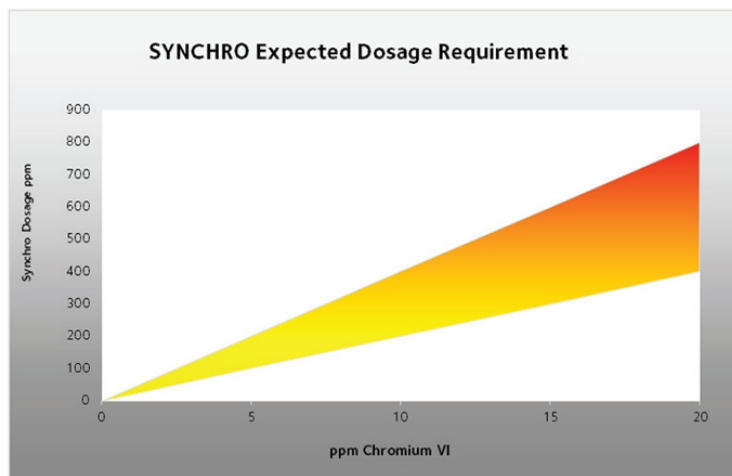
SYNCHRO 205 is available in 1 m³ IBC containers weighing approximately 1400 kg. SYNCHRO 205 may also be supplied to certain locations in bulk. Shelf-life is at least 12 months if stored in manufacturer's containers.

Health & Safety

All precautions defined on the Safety Data Sheet) for SYNCHRO 205 must be followed container can be cleaned with water.

Technical Services

Field Engineers from GCP Applied Technologies are available to assist in laboratory and mill test evaluations of SYNCHRO 205.



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