

Technical data sheet

CHRYSO®CWA 10

Crystalline waterproofing admixture

Description

CHRYSO®CWA 10 is a crystalline waterproofing admixture in a dry powder form that is added to the concrete mix at the time of batching. Active ingredients of **CHRYSO®CWA 10** react with moisture to form crystals deep within the pores and capillary tract of the concrete structure. **CHRYSO®CWA 10** can transform an entire concrete structure into an impermeable water barrier with lasting integral waterproofing properties. Used to waterproof both the interior and exterior of building, **CHRYSO®CWA 10** prevents concrete decay and protects against moisture transmission, chemical attack and corrosion of reinforcing steel.

Advantages

- **CHRYSO®CWA 10** can be used for positive and negative waterproofing of a structure.
- The product is ideal for concrete exposed to harsh conditions and enhances the durable properties of concrete as it protects the concrete from waterborne soluble salts
- Gives concrete crack sealing characteristics, it can seal hairline crack up to 0.4 mm wide
- **CHRYSO®CWA 10** is a permanent, non toxic product that is highly resistant to aggressive chemicals.
- An integral waterproofing system that is a permanent solution.
- The product can be added to concrete at the time of batching and is therefore not subject to climatic restraints.
- Process friendly and increases flexibility in construction scheduling.

Physical and chemical properties

- Physical state: aggregated powder
- Colour: grey
- Alkali content: < 0.35% Na₂O
- Specific gravity @ 25 °C: > 1.3 bulk
- pH (working dilution): > 12
- Solubility of preparation in water: partially soluble

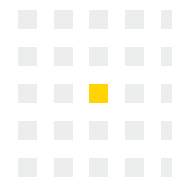
Application guidelines

Areas of application

- Foundations.
- Sewerage and water treatment plants.
- Tunnels.
- Underground structures.
- Dams.
- Precast structures.
- Swimming pools.
- Reservoirs.
- Precast components.

Method and dosage

- As site conditions and temperature variations commonly occur, **CHRYSO's** technical department is readily available to tailor make mix designs and dosages according to a customer's requirements.
- The recommended dosage rate is between 0.8% and 1% of the cement weight.
- **CHRYSO®CWA 10** is added to concrete during the batching process. Directions may vary according to the type of batch plant operation and equipment used. Below are some typical mixing guidelines.



Technical data sheet

CHRYSO®CWA 10

Crystalline waterproofing admixture

- **Readymix plant wet** – the ratio must be 18 kg **CHRYSO®CWA 10** to 8.1 L of water. Add to the wet concrete that is being batched in the truck to the required dosage of 0.8 or 1%. Batch the concrete as normal good practise requires, keeping in mind that the amount of water added to the **CWA 10** slurry should be subtracted from the batching water that needs to be added. Mix for at least five minutes in order to make sure that **CHRYSO®CWA 10** is evenly distributed throughout the mix.
Readymix plant dry – add **CHRYSO®CWA 10** directly to the drum of the dry mix truck and then thoroughly mix the admixture with half of the required aggregate. Add the water, making sure that the product is distributed evenly throughout the mix water. Add the remaining half of the water and aggregate.
Precast – Add **CHRYSO®CWA 10** to coarse aggregate and fine aggregate and then mix thoroughly for two to three minutes before adding cement and water.

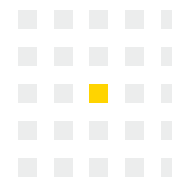
- The total quantity of the water to be added into the design mix should take into consideration the moisture content of both coarse and fine aggregates.
- The aggregate, cement and water should be batched according to standard practices.

Precautions

- In order to achieve a homogenous mix, never add the dry powder of **CHRYSO®CWA 10** into a wet mix. This is because the **CHRYSO®CWA 10** powder will not disperse properly within the mix.
- Before adding **CHRYSO®CWA 10**, make sure that the concrete temperature of the mix is above 5 °C.

Testing

Name of test	Test Method	Reference
Chloride content	BS EN 480-10	
Compressive Strength	BS EN 12390-3:2009	Table 1
Depth of water penetration and pressure	BS EN 12390-8:2009	Table 2
Green certification	Singapore green building product labelling scheme	
Permeability test	DIN 1048	
Scanning electron microscope test	ASTM C1723-10	
Slump	BS EN 12350:2009	Table 1 and Table 3
Stiffening time	BS EN 12394:2002	
Water soluble chloride content	EN 480-10	
Water toxicity test	Singapore Standard 375:2001 and US EPA Method 1311: toxicity characteristic leaching procedure	



Technical data sheet

CHRYSO®CWA 10

Crystalline waterproofing admixture

Table 1: Compressive strength (BS EN 12390-2:2009) and slump (BS EN 12350:2009)

Sample reference	Treated with CWA 10						Control					
Specimen reference	1	2	3	4	5	6	1	2	3	4	5	6
Date of cast	03/07/2013											
Slump of fresh concrete (mm)	170 mm						180 mm					
Date of test	10/07/2013			31/07/2013			10/07/2013			31/07/2013		
Age of test (days)	7			28			7			28		
Compressive strength (N/mm ²)	40	40.6	39.3	50.5	50.7	50.1	38.9	40	39.3	50.5	51.0	51.2
Average compressive strength (N/mm ²)	40.1			50.4			39.4			50.9		

Setsco Services, Singapore, 2013

Table 2: Depth of water penetration under pressure (BS EN 12390-8:2009)

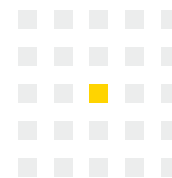
Sample reference	Treated with CWA 10			Control		
Specimen reference	1	2	3	1	2	3
Size of cube (mm)	150					
Date of cast	03/07/2013					
Date of test	02/08/2013					
Age of test	30					
Pressure applied (kg/cm ²)	5					
Number of hours of pressure applied	72					
Date of sample split	05/08/2013					
Depth of water penetration (mm)	13.5	15.7	11.8	20.7	21.0	19.8
Average depth of water penetration	13.7			20.5		

Setsco Services, Singapore, 2013

Table 3: Slump (BS EN 12350:2009) and stiffening time test (BS EN 12394:2002)

Sample reference		Control mix	Treated with CWA 10
Date of concrete mix and test		01/09/2011	
Time of concrete mix		10h30	11h30
Slump of fresh concrete (mm)		140	150
Time of reaching resistance to penetration (minutes)	0.5 N/mm ² initial set	255	300
	3.5 N/mm ² final set	390	450

Setsco Services, Singapore, 2011



Technical data sheet

CHRYSO®CWA 10

Crystalline waterproofing admixture

Water toxicity test (Singapore Standard 375:2001 and US EPA Method 1311: toxicity characteristic leaching procedure)

Admaterials Technologies PTE, Singapore, 2012

The report shows that the samples complies with the requirements of SS 375:2001: Part 1 and Part 2 and is deemed suitable for use in contact with water intended for human consumption.

Storage

- If stored in an unopened bag in a cool, dry place – **CHRYSO®CWA 10** will have a shelf life of 12 months.

Packaging

18 kg bag

Health and safety

CHRYSO®CWA 10 is classified as an irritant. Refer to the materials safety data sheet. **CHRYSO** will provide onsite assistance if requested.

Eyes

CHRYSO®CWA 10 may cause significant irritation if splashed in or has any contact with a person's eyes hold the eyelids open and wash thoroughly with water.

Skin

CHRYSO®CWA 10 may cause significant skin irritation. Should the product have any contact with the skin, wash the affected area with soap and water. Obtain medical attention if irritation persists.

The information contained in this document is given to the best of **CHRYSO**'s knowledge and is the result of extensive testing. However, this document will not under any circumstances be considered as a warranty involving **CHRYSO**'s liability in case of misuse. Tests should be carried out before any use of the product to ensure that the methods and conditions of use of the product are satisfactory. **CHRYSO** specialists are at the disposal of the users in order to help them with any problems encountered.