



# CHEM-CRETEX<sup>®</sup> CEM600

**Cementitious Crystalline Capillary Waterproofing System for Concrete Substrates**

## PRODUCT DESCRIPTION

CHEM-CRETEX<sup>®</sup> CEM600 is a one component, crystalline capillary waterproofing system composed of proprietary blend of Portland cement, silica sand and many active chemicals. In the presence of moisture, the active chemicals in CHEM-CRETEX CEM600 penetrate the concrete and produce insoluble crystals, these crystals have affinity to moisture and continue to grow. This crystalline growth reduces concrete's porosity by blocking capillaries and filling hairline non-structural cracks up to 0.01" (0.254 mm) caused by shrinkage or expansion.

CHEM-CRETEX CEM600 produces a non-soluble crystalline growth throughout the pores and capillary tracts of concrete, thus rendering the concrete totally sealed against the penetration of water from positive and negative sides. This crystalline growth is highly resistant to extreme water pressure. The crystalline structure is a long lasting and can seal or re-seal many defects, which might occur in the concrete at a later period.

CHEM-CRETEX CEM600 system consists of 3 products which can be used separately or together depending on the project needs. These products are:

- CHEM-CRETEX CONCENTRATE CEM600C
- CHEM-CRETEX MORTAR CEM600M
- CHEM-CRETEX PLUG CEM600P

CHEM-CRETEX CONCENTRATE CEM600C is applied as dry shake to freshly poured concrete or mixed with water to produce a slurry coating for walls and floors of cured concrete.

CHEM-CRETEX MORTAR CEM600M is a designed to be applied in mortar consistency to make coves, and filling reglets at construction joints. It is also used to repair honeycombs, cracks, filling form-tie holes and cold joints and is used in conjunction with CHEM-CRETEX CONCENTRATE CEM600C.

CHEM-CRETEX PLUG CEM600P is formulated to form a "Hot Patch" to stop active leaks. When CHEM-CRETEX PLUG CEM600P is mixed with water it hardens in 1 to 2 minutes. CHEM-CRETEX PLUG CEM600P is used in conjunction with CHEM-CRETEX CONCENTRATE CEM600C.

## FIELDS OF APPLICATION

Uses of CHEM-CRETEX CEM600 include but not limited to:

- Sewage and water treatment plants.
- Water tanks and reservoirs.
- Concrete pipes and manholes.
- Tunnels and subways.
- Elevator pits, foundations, and slabs.
- Industrial plants, factory floors and office building.
- Basements and planters.
- Power plants and sub-stations.

- Roof decks, parking decks and retaining walls.
- Dams and swimming pools.

## PRODUCT FEATURES

- One component, easy to use and requires only addition of water.
- Economical and easy to apply by brush, broom, squeegee, or spray techniques.
- Can be applied to moist or 'green' concrete
- Penetrates concrete, seals capillary tracts and hairline cracks.
- Provides long-lasting internal waterproofing and moisture blocking from positive and negative sides.
- Non-toxic.
- Resists high hydrostatic pressure from positive and/or negative side.
- Protects concrete in-depth.
- Resists deicing salts.
- Resists chemical attack of sewage and industrial wastes.
- Exterior and interior applications.

## PRODUCT ADVANTAGES

- CHEM-CRETEX CEM600 cannot puncture, tear, rupture or come apart at the seams (if it is not a moving structural cracks or joints)
- Low cost for material and application.
- Does not require absolute dry weather to be applied.
- Does not require a dry surface and in fact a damp and moist surface is necessary.
- Can be applied on either side of a concrete surface, negative or positive (water pressure) side.
- Does not require surface priming or leveling prior to application.
- Does not require sealing, lapping, and finishing of seams at corners, edges or between membranes.
- Does not require protection during back filling or during placement of steel, wire mesh or other materials.

## PACKAGING

Product	Packaging
CHEM-CRETEX CONCENTRATE CEM600C	55 LB (25.00 KG) BAG
	55 LB (25.00 KG) PAIL
CHEM-CRETEX MORTAR CEM600M	50 LB (22.68 KG) BAG
	50 LB (22.68 KG) PAIL
CHEM-CRETEX PLUG CEM600P	20 LB (9.10 KG) PAIL

## TECHNICAL DATA

When applied in accordance with the specifications, CHEM-CRETEX CEM600 functions at 100% efficiency within the following conditions:

Humidity	No effect
pH Range	From 3.0 to 11.0 constant contact From 3.0 to 12.0 periodic contact

Ultra Violet	No effect
Oxidation	No effect

**Color:** grey as a standard color, white color is available upon request.

Product Performance: CHEM-CRETEX CONCENTRATE CEM600C comply with the following test standards:

- ❑ BS EN 12390 PART 8:2000 Depth of Penetration of Water Under Pressure. Test is performed at 167 FT continuous water pressure for 72 hours duration. CEM600C reduced water penetration from average 22 mm for control sample (un treated) to average 5 mm for treated sample (sample coated with CEM600C).
- ❑ ASTM D3273-94 Resistance to Growth of Mold on The Surface of Coatings in an Environmental Chamber, 4 weeks duration on a scale of 1 to 10 with 1 being least resistant to mold growth. Test result was a 10 indicating mold growth was absent on the test sample coated with CEM600C.
- ❑ ASTM D1308 Chemical Resistance Test Report, pH 3.0 – 11.5. Slight discoloration and no sign of corrosion were observed.

### APPLICATION DATA

**Limitations:** Do not apply CHEM-CRETEX CEM600 products when temperature falls below 5°C (41°F) or if temperature is expected to fall below 5°C (41°F) within 24 hours. Don't apply CHEM-CRETEX CONCENTRATE CEM600 slurry coat to horizontal concrete surfaces which are less than 24 hours old.

**General Specification for Concrete Finish:**

Concrete surfaces shall have an open capillary system to provide tooth and suction and shall be clean; free from scale, oil, laitance, curing compounds and any other contaminates. Smooth surfaces caused by steel forms, etc. or surfaces covered with form oil and other contaminants shall be washed, lightly sand-blasted, or water-blasted to provide a clean surface.

Vertical surfaces may have a sacked finish. Horizontal surfaces shall not be troweled, or power troweled and shall be left with a rough float finish or (preferably) a broom finish. If power troweling is required, it shall be kept to a minimum.

**Surface Preparation:**

**I- Old Concrete:** surfaces must be clean and sound. Remove all oil, dirt, laitance and other contaminants by water blasting or using concrete cleaners like CHEM-CRETE CONCLEAN CCC060. Water blasting is preferred for surface preparation, it mechanically cleans and roughens the surface also it leaves the surface saturated with water. Surfaces must be saturated and/or damp with water for application of CHEM-CRETEX CEM600 products to insure proper migration of crystalline chemicals into the capillary voids in the concrete.

**II- New Concrete:** after forms are stripped of new 'GREEN' concrete, clean the concrete by water blasting or concrete cleaner like CONCLEAN CCC060 to remove form oil, curing compounds, sand, laitance and any other contaminants. Surface must be left saturated and/or damp with water for application of CHEM-CRETEX CEM600 products.

**Joints and Cracks:** Construction joints, cold joints, and non-leaking cracks greater than 3.0 mm in width must be routed out to sound concrete; 1 inch (25.4mm) wide by 1 inch (25.4

mm) deep. Leaking cracks greater than 3 mm in width must be routed to sound concrete; 1 – 1.5 inch (25.4 – 38.3 mm) wide by 1 inch (25.4 mm) deep. Clean all debris and loose concrete from leaking area. Saturate routed area with water and leave damp for application of CHEM-CRETEX CEM600 products.

**CHEM-CRETEX CONCENTRATE CEM600C**

**Water Requirements:** use only clean fresh water for mixing with CHEM-CRETEX CONCENTRATE CEM600C, the following mixing ratios are recommended:

- ❑ Slurry Coat - Brush Application: 2.5 parts CHEM-CRETEX CONCENTRATE CEM600C to 1-part water by volume is recommended for brush and broom applications.

Note: using 2.5: 1 volume mix ratio, a 55 Lb (25 kg) CEM600C requires 1.75 Gallons (6.624 liters) water.

- ❑ Slurry Coat - Spray Application: 2 parts CHEM-CRETEX CONCENTRATE CEM600C to 1-part water by volume is recommended for spray applications. Spray application may require slightly different proportions in order to properly match the type of equipment and pressures used.

Note: using 2: 1 mix ratio, a 55 Lb (25 kg) CEM600C requires 2.20 Gallons (8.3 liters) water.

**Pot Life (Working Time):** 35 minutes @ 77°F (25°C)

**Setting Time, ASTM C191:** 45 minutes @ 77°F (25°C)

**Coverage – CHEM-CRETEX CONCENTRATE CEM600C:**

a.	Dry shake on freshly poured concrete	1.25 to 2.5 Lb/yd <sup>2</sup> (0.68 to 1.36 Kg/m <sup>2</sup> )
b.	Slurry coat using brush, spray, and roller application	1.60 to 2.5 Lb/yd <sup>2</sup> (0.87 to 1.36 kg/m <sup>2</sup> )

The above coverage is for estimation purposes, slight variations may occur depending on the porosity and substrate conditions.

A slurry coat application of CHEM-CRETEX CONCENTRATE CEM600C using a coverage rate of 2.5 Lb/yd<sup>2</sup> (1.3 kg/m<sup>2</sup>) yields an average 0.75 mm coating thickness. Required number of coats will depend on application conditions.

Using coverage rate of 2.5 Lb/yd<sup>2</sup> (1.3 kg/m<sup>2</sup>), a 55 Lb CHEM-CRETEX CONCENTRATE CEM600C will cover 22 yards<sup>2</sup> (18.4m<sup>2</sup>).

**Mixing:** Mix CHEM-CRETEX CONCENTRATE CEM600C thoroughly with a slow speed drill equipped with mixing paddle. For large batches, mix with mortar mixer. Allow 2-3 minutes mixing and waiting time before start applying the material. Material should be mixed in quantities, which can be applied within 30 minutes from the time of mixing at approximately 75°F (24°C) ambient temperature. As the mixture thickens, it shall be stirred frequently to restore workability, no additional water should be added.

## Application:

**Dry Shakes for Newly Poured Concrete:** Use CHEM-CRETEX CONCENTRATE CEM600C powder as is, directly from its container. Wearing rubber gloves and dust mask, distribute the powder evenly by hand over freshly poured concrete at the rate of 1.25 lbs. to 2.50 lbs./yard<sup>2</sup> (0.68 to 1.36 kg/m<sup>2</sup>) before final floating operation. It is best to distribute the powder at half the recommended rate in one direction and the other half at a right angle to the first application. Keep hands as close as possible to the surface to prevent material from blowing away. For large areas, a rotary type spreader may be used. Float slab and trowel to final finish.

**Slurry Coat for Existing Concrete:** CHEM-CRETEX CONCENTRATE CEM600C slurry coat may be applied using brush, broom, or sprayer at the rate of 1.60 to 2.5 Lbs./yard<sup>2</sup> (0.87 to 1.36 kg/m<sup>2</sup>). Be sure to work slurry well into openings, rough surfaces, joints and routed out areas. Apply second coat, if required, when first coat has taken initial set. If first coat has dried out, moisten before applying second coat.

**Repair to Existing Leaking Structures:** The CHEM-CRETEX CEM600 products can be used to stop leaks from the inside of any concrete or block structure even against high water pressure. Cold joints, honeycombing, faulty and leaking construction joints, and cracks can all be sealed permanently with CHEM-CRETEX CEM600 products. All concrete deficiencies must be routed out and cleaned thoroughly. If necessary, a plastic or rubber tube is inserted to control the flow of water. The routed-out area is then coated with CHEM-CRETEX CONCENTRATE CEM600C slurry. Fill the remainder of the cavity with CHEM-CRETEX PLUG CEM600P then coat the final surface with CHEM-CRETEX CONCENTRATE CEM600C slurry. When the CHEM-CRETEX PLUG CEM600P has set fully, withdraw the pipe, and plug the hole with CHEM-CRETEX PLUG CEM600P and then coat the surface again with CHEM-CRETEX CONCENTRATE CEM600C slurry.

**Back Filling:** Back filling cannot take place until 36 hours after application. If back filling takes place within 7 days after application, the back-filling material must be moist so as not to draw moisture from CHEM-CRETEX CONCENTRATE CEM600C coating.

**Over Coating - Application of Paints, Epoxy or Similar Coating:** the waterproof coating requires 28 days of curing before any such application commences. Before applying the coating, it is recommended to wash the waterproofed surface with concrete cleaners like CHEM-CRETE CONCLEAN CCC060.

**Curing:** CHEM-CRETEX CONCENTRATE CEM600C applications must be cured for a minimum of two days. After initial set, it is critical to moist cure using water spray. Treated surface should be fog sprayed 3 to 4 times daily for a two-day period. For warmer climates, more frequent spraying may be required. It is important to keep the CHEM-CRETEX CONCENTRATE CEM600C moist to allow crystals formation to occur. Protect surfaces from foot traffic for 2 days or heavy traffic for 5 days. CHEM-CRETEX CONCENTRATE CEM600C must be protected from extreme weather conditions such as strong wind, freezing, high temperatures and rain for a period of not less than 2 days after application.

## CHEM-CRETEX MORTAR CEM600M

**Pot Life (Working Time):** 35 minutes @ 77°F (25°C)

**Setting Time, ASTM C191:** 45 minutes @ 77°F (25°C)

**Mixing:** Add sufficient, clean, potable water to the powder to produce a stiff trowelable mortar. Mix thoroughly with a low speed drill equipped with a paddle or use mortar mixer for large batches. Do not mix more material than can be used in 30 minutes at 75°F (24°C).

**Priming:** Surfaces must be saturated and/or damp with water for application of CHEM-CRETEX MORTAR CEM600M.

**Application:** Apply CHEM-CRETEX MORTAR CEM600M with trowel or spatula, 0.5 inches x 1-inch x 1-yard long joint will require approximately 1.2 Lb of CHEM-CRETEX MORTAR CEM600M (1 cm x 2.5 cm x 1-meter long joint will require approximately 0.46 Kg of CHEM-CRETEX MORTAR CEM600M). Apply mortar to cracks, holes, reglets, and cove areas. Apply CHEM-CRETEX MORTAR CEM600M in layers not greater than 1 inch (2.54 cm). Allow mortar to take initial set before adding additional layers.

**Curing:** CHEM-CRETEX MORTAR CEM600M applications must be cured for a minimum of two days. After initial set, it is critical to moist cure using water spray. CHEM-CRETEX MORTAR should be fog sprayed 3 to 4 times daily for a two-day period. For warmer climates, more frequent spraying may be required. It is important to keep the CHEM-CRETEX CONCENTRATE CEM600M moist to allow crystals formation to occur. CHEM-CRETEX MORTAR CEM600M must be protected from extreme weather conditions such as strong wind, freezing, high temperatures and rain for a period of not less than 2 days after application.

## CHEM-CRETEX PLUG CEM600P

**Pot Life (Working Time):** 1 to 2 minutes

**Mixing:** Wearing rubber gloves, add CHEM-CRETEX PLUG CEM600P to clean potable water to form a stiff moldable mix. Work and knead the mixture by hand until lump-free. Mix small quantities which can be applied within 1 to 2 minutes

**Application:** After mixing into a plastic consistency, force it into the leak against solid concrete and apply as much as pressure as possible by hand, holding the pressure for a minimum of 60 seconds. For large cracks or holes, several plugs may be required before leak ceases. Shape the plugged area using a gloved finger or with a small gauge trowel.

## CLEANING

All tools and equipment must be cleaned with clean water immediately after use.

## STORAGE

CHEM-CRETEX CEM600 products should be stored in original undamaged packs in cool and dry storage place. The shelf life of CHEM-CRETEX CEM600 is minimum one year. Using of pails packaging will extend the shelf like of CHEM-CRETEX CEM600 to minimum 2 years. Don't store the product in direct sunlight.

## SAFETY PRECAUTIONS

As with all construction chemical products, adequate precautions and care must be taken during usage and storage. Avoid direct contact with foodstuff, eyes, skin, and mouth. Keep away from children and animals. Any direct contact with skin, eyes, etc. should be washed thoroughly with clean running water and soap. Use proper safety wear, goggles, and mask, etc.

## TECHNICAL ASSISTANCE

Please contact International Chem-Crete Corporation for Technical Personnel.

## WARRANTY

**LIMITED WARRANTY:** International Chem-Crete Inc. warrants that, at the time and place we make shipment, our materials will be of good quality and will conform to our

published specifications in force on the date of acceptance of the order.

**DISCLAIMER:** The information contained herein is included for illustrative purposes only and, to the best of our knowledge, is accurate and reliable. International Chem-Crete Inc. is not under any circumstances liable to connection with the use of information. As International Chem-Crete Inc. has no control over the use to which others may put its products, it is recommended that the products be tested to determine the suitability for specific applications and/or our information is valid in particular circumstances. Responsibility remains with the architect or engineer, contractor and owner of the design, application, and proper installation of each product. Specifier and user shall determine the suitability of the product for specific application and assume all responsibility in connection therewith. AM18319

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