

CHEMFIT CORROSHIELD 5000

Corrosion Inhibiting Admixture – Calcium Nitrate Based for Reinforced Concrete

PRODUCT DESCRIPTION

ChemFit CorroShield 5000 is a high-performance, calcium nitrate based corrosion inhibiting admixture specifically formulated to protect steel reinforcement from corrosion in concrete structures. This advanced admixture works by forming a protective passive layer on the reinforcing steel, significantly reducing the corrosion rate even in chloride-contaminated environments. It is the ideal solution for extending the service life of reinforced concrete structures exposed to deicing salts, seawater, or aggressive industrial environments.

PRIMARY APPLICATIONS

ChemFit CorroShield 5000 is recommended for use in conditions such as:

- Bridge decks, piers, and abutments exposed to deicing salts
- Parking structures in cold climates
- Marine structures (piers, docks, seawalls, harbors)
- Concrete exposed to seawater or brackish water
- Industrial floors and structures exposed to aggressive chemicals
- Tunnels and underground structures
- Reinforced concrete in coastal regions
- Wastewater treatment plants and sewer systems
- Concrete repair and rehabilitation projects
- High performance concrete requiring extended service life
- Precast concrete for marine or aggressive environments

KEY FEATURES AND BENEFITS

- **Corrosion protection** – Significantly reduces corrosion rate of reinforcing steel in chloride-contaminated environments
- **Calcium nitrate based** – Proven, reliable corrosion inhibition technology
- **Passive layer formation** – Creates protective film on steel reinforcement surface
- **Chloride resistance** – Extends corrosion initiation threshold (critical chloride level increased by 2-4 times)
- **Extends service life** – Adds 15-30+ years to reinforced concrete structures
- **Accelerates setting** – Provides moderate acceleration (Type C effect) beneficial in cold weather
- **Improves early strength** – Enhances early strength development (10-20% increase at 24 hours)
- **Compatible with all cements** – Works with OPC, PPC, PSC, and blended cements

- **Liquid form** – Easy to dispense and batch accurately
- **Non-toxic** – Environmentally acceptable formulation
- **Reduces maintenance costs** – Lowers long-term repair and rehabilitation expenses

PHYSICAL AND CHEMICAL PROPERTIES

Property	Specification
Appearance	Clear to slightly hazy liquid
Color	Colorless to light straw
Specific Gravity	1.35 – 1.45 at 25°C
pH Value	6.5 – 8.5
Chloride Content	Nil ($\leq 0.01\%$) – Non-corrosive to rebar
Active Ingredient	Calcium nitrate (25-35% solution)
Freezing Point	- 5°C (protect from freezing)
Corrosion Protection	$\geq 90\%$ reduction in corrosion rate (laboratory testing)
Critical Chloride Threshold	Increased by 2 – 4 times vs. control concrete

PACKAGING AND STORAGE

Packaging:

- 200 L drums
- 1000 L IBCs (Intermediate Bulk Containers)

Storage:

- Store in original sealed containers at +5°C to +35°C
- Protect from direct sunlight, frost, and extreme heat
- Keep container tightly closed when not in use
- Do not allow to freeze

Shelf life:

- 12 months from date of manufacture

DOSAGE AND COVERAGE RATES

The recommended dosage of **ChemFit CorroShield 5000** is **10 to 30 Liters per cubic meter of concrete (L/m^3)**, depending on the level of corrosion protection required and expected chloride exposure.

- **Low dosage (10 – 15 L/m^3):** Provides moderate corrosion protection for mild chloride exposure (parking structures, occasional deicing salt contact)
- **Medium dosage (15 – 20 L/m^3):** Delivers standard corrosion protection for typical marine environments and bridge decks with regular deicing salt exposure
- **High dosage (20 – 30 L/m^3):** Produces maximum corrosion protection for severe chloride exposure (splash zones, seawater immersion, heavy deicing salt application)
- **Per 50 kg cement bag (assuming 350 kg/m^3 cement content):** Dosage ranges from approximately 1.4 to 4.3 liters per bag
- **Yield per 200 L drum:** Covers approximately 7 to 20 cubic meters of concrete (depending on dosage)
- **Yield per 1000 L IBC:** Covers approximately 33 to 100 cubic meters of concrete (depending on dosage)

NOTE: Concrete trial mixes shall be carried out to confirm optimal dosage for specific project requirements. The required dosage depends on expected chloride exposure, concrete mix design, cement content, and desired service life. For structures with expected chloride exposure > 0.4% by weight of cement, higher dosages (20-30 L/m^3) are recommended.

APPLICATION GUIDELINES

ChemFit CorroShield 5000 should be added directly to the mixing water or to the concrete during batching. For best results, add the admixture to the mixing water before combining with cement and aggregates to ensure uniform distribution. The concrete should be mixed for a minimum of 2 to 3 minutes to ensure uniform dispersion of the admixture. This product is compatible with all standard Portland cements, blended cements, and most supplementary cementitious materials such as slag, fly ash, and silica fume. **ChemFit CorroShield 5000** is compatible with most concrete admixtures including water reducers, superplasticizers, retarders, air entrainers, and shrinkage reducers; however, trial mixes are recommended to confirm compatibility. Do not premix with other admixtures in concentrated form. If overdosed, significant acceleration and heat generation may occur, potentially leading to thermal cracking in mass concrete; reduce dosage in subsequent batches. This product acts as a set accelerator (ASTM C494 Type C); for hot weather applications, a retarder may be required to offset acceleration effects. For maximum corrosion protection, ensure adequate concrete cover over reinforcement and proper curing. For marine structures, a dosage of 15-20 L/m^3 is typically sufficient for splash zone applications.

HEALTH AND SAFETY

ChemFit CorroShield 5000 may cause mild to moderate eye and skin irritation. If eye contact occurs, rinse thoroughly with water for 15 minutes and seek medical advice if irritation persists. For skin contact, wash with soap and water. If swallowed, do not induce vomiting; instead rinse the mouth and drink water, then seek medical advice immediately. Use nitrile gloves, goggles, and protective clothing during handling. Ensure adequate ventilation when using in enclosed spaces. Refer to the Safety Data Sheet for detailed information.

CLEANG OF TOOLS

Clean all batching equipment, measuring containers, and spillages with water immediately after use. Dried or cured material may require mechanical removal.

APPROVALS AND STANDARDS

ChemFit CorroShield 5000 conforms to the following standards:

- **ASTM C494 / C494M** – Type C (Accelerating Admixture)
- **NACE** (National Association of Corrosion Engineers) recommended practice
- Provides corrosion inhibition performance meeting industry requirements for reinforced concrete

LEGAL NOTES

All technical data provided in this Product Data Sheet is based on laboratory testing under controlled conditions. Actual field performance may vary due to differences in substrates, application methods, site conditions, and environmental factors. ChemFit makes no warranty of merchantability or fitness for a particular purpose. Users shall conduct their own trials to validate product suitability for the intended application. ChemFit reserves the right to modify product specifications without prior notice. For the most current documentation, request the latest Product Data Sheet and Safety Data Sheet from ChemFit.

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