Colloidal Silica Concrete Densifier & Waterproofing Treatment

PRODUCT DESCRIPTION

ARMACRETE C2 Colloidal is a high-performance, water-based colloidal silica treatment designed to densify, strengthen, and reduce the permeability of concrete and cementitious substrates.

Formulated as a 100% colloidal silica dispersion, ARMACRETE C2 utilises ultra-fine particle technology to penetrate deeply into the concrete pore structure. The product reacts with free lime (calcium hydroxide) to form additional calcium silicate hydrate (C-S-H), refining capillary pores and producing a denser, more durable concrete matrix.

This treatment provides long-term reduction in water ingress, improved abrasion resistance, and permanent dust-proofing while remaining breathable and non-film forming.

ADVANTAGES

- Ultra-fine colloidal particle size enables deep penetration, including dense and polished concrete
- Chemically densifies and strengthens concrete through C-S-H formation
- Reduces capillary porosity and water permeability
- Provides integral waterproofing within the concrete matrix
- Improves abrasion and wear resistance
- Eliminates concrete dusting
- Reduces tyre marking and surface contamination
- Non-film forming – will not peel, flake, or delaminate
- Breathable system allowing moisture vapour transmission
- Water-based, zero VOC and Green Star compliant
- Compatible with subsequent coatings and polishing systems

TYPICAL APPLICATIONS

- Industrial and warehouse floors
- Polished concrete systems
- Commercial and retail flooring
- Car parks and trafficable areas
- Precast and tilt-up concrete
- Infrastructure and civil concrete
- Basements and below-grade structures
- Concrete slabs (new and existing)

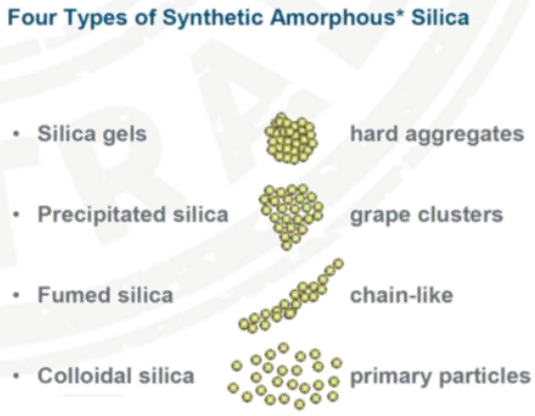
PERFORMANCE CHARACTERISTICS

ARMACRETE C2 Colloidal enhances concrete performance by modifying the internal pore structure rather than forming a surface coating.

Colloidal Silica densifiers have the smallest particle size in the concrete densifier product category.

This is not the molecule size, but the agglomerated macro particle size (i.e. lithium silicate is a larger molecular than potassium silicate but the agglomerate size in the solution is much smaller).

As the diagram below displays, the colloidal solution is an evenly distributed dispersion of individual particles and much finer again than traditional alkaline metal silicates (sodium/potassium/lithium silicate) clusters.



Mechanism of Action:

- Penetrates deeply into concrete due to nano-scale colloidal particles
- Reacts with calcium hydroxide to form additional C-S-H gel
- Refines capillary pores and reduces permeability

Performance Outcomes:

- Significant reduction in water absorption and capillary ingress
- Increased surface hardness and abrasion resistance
- Permanent dust-proofing of concrete surfaces
- Improved resistance to staining and tyre marking
- Enhanced durability and service life of concrete

Note: While permeability is significantly reduced, ARMACRETE C2 is not a membrane and will not bridge cracks or resist active hydrostatic pressure.

SUBSTRATE REQUIREMENTS

Concrete must be structurally sound and free of laitance.

Surface must be clean and free of contaminants including oils, grease, curing compounds, sealers, or coatings.

New concrete should be cured sufficiently prior to application.

Mechanical preparation (grinding or cleaning) may be required to achieve optimal penetration.

APPLICATION METHOD

General

ARMACRETE C2 Colloidal must be applied to achieve full surface saturation to enable maximum penetration and reaction within the concrete matrix.

Application Procedure - Surface Preparation

Ensure substrate is clean, sound, and free of contaminants.

Remove weak or friable material.

Application

Apply undiluted using low-pressure spray equipment.

Distribute evenly across the surface.

Saturation Phase

Maintain a wet surface for a minimum of 15 minutes.

Broom or redistribute material to ensure uniform penetration.

Apply additional material if required to maintain dampness.

Excess Removal

After approximately 60 minutes, remove excess material using a squeegee or suitable method.

Do not allow excess product to dry on the surface.

Post Application

Allow treated surface to cure naturally.

Restrict water exposure for at least 24 hours.

Safety Note: Treated surfaces may be slippery during application.

COVERAGE RATES

Typical application rate: 5m²/L (0.2 L/m²)

Coverage will vary depending on substrate porosity.

Highly dense concrete may require lower consumption, while porous surfaces may require additional application.

LIMITATIONS

Not suitable for non-cementitious substrates.

Not a surface membrane or crack-bridging system.

Does not stop active leaks under hydrostatic pressure.

A penetrating sealer may be required for enhanced stain protection.

Avoid application to saturated or frozen substrates.

QUALITY ASSURANCE

ARMACRETE C2 Colloidal is manufactured under controlled conditions to ensure consistency in particle size, dispersion stability, and performance.

SPECIFICATION CLAUSE (SAMPLE)

All designated concrete surfaces shall be treated with ARMACRETE C2 Colloidal, a penetrating colloidal silica densifier and permeability-reducing treatment.

The product shall be a 100% colloidal silica dispersion with nano-scale particle size, designed to penetrate concrete and chemically react to form additional calcium silicate hydrate (C-S-H), thereby reducing porosity, increasing surface hardness, and improving resistance to water ingress.

The treatment shall be applied undiluted at a minimum rate of 5 m²/L and maintained in a wet condition for not less than 15 minutes to ensure adequate penetration.

Excess material shall be removed prior to drying.

Application shall be carried out strictly in accordance with the manufacturer's written instructions.

TECHNICAL DATA

COVERAGE	5m2 per litre (0.2L/m2) as supplied
CLEAN UP	Water cleanup
FIRST AID, SAFETY & STORAGE	Refer to Material Safety Data sheet.
PACKS	20L, 200L, 1000 (IBC)

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