

CRYSTLE 126AG

Cementitious Crystalline
Waterproofing Admixture

GENERAL DESCRIPTION

AXEL CRYSTLE 126AG is a single pack reactive dry powder cementitious material, designed as a admixture for concrete to improve its performance and durability. AXEL CRYSTLE 126AG contains active waterproofing chemicals which integral to parts of concrete and form a chemical reaction with cementitious materials in concrete to generate crystals that help to fill capillary pores and seal micro-cracks in the concrete.

RECOMMENDED USES

- * Bridges
- * Sewage plants
- * Reservoirs
- * Basements
- * Damps
- * Concrete platforms
- * Water treatment plants
- * Retaining structures
- * Parking pits

CHARACTERISTICS & ADVANTAGES

- * Non-toxic
- * Easy to install
- * Improve concrete's durability & strength
- * Added to the concrete at the time of batching and therefore not subject to climatic restraints
- * Seal hairline cracks
- * Cost effective when compared to alternative method
- * Resistant to water pressure & aggressive chemicals

COVERAGE

- * 3-4kg / m³ of concrete or
- * 1-1.2 % dosage rate by weight of cement content depending on mix design

COLOURS

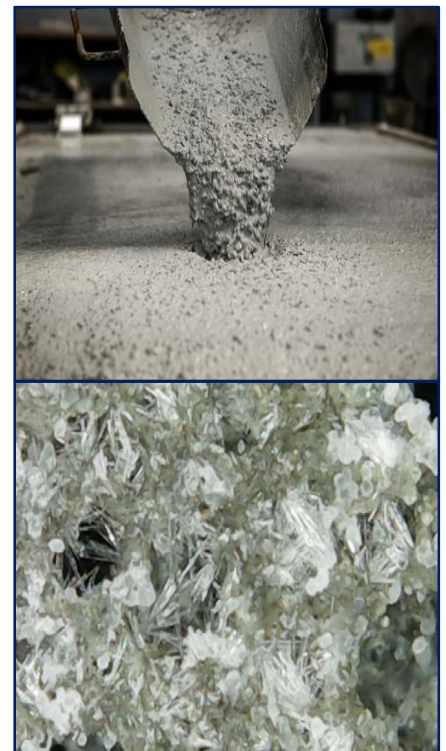
Standard grey

PACKING

25 kg per bag

STORAGE

Store in a dry, cool and shaded place



METHOD OF APPLICATION

- * AXEL CRYSTLE 126AG is added to the concrete at the time of batching.
- * Dosage of 1-1.2% by weight of cement content or 3-4kg per m³ concrete.
- * Add AXEL CRYSTLE 126AG in powder form to the drum of the ready mix truck.
- * Mixing for 10 minutes after the addition of AXEL CRYSTLE 126AG to ensure a uniform distribution of admixture in concrete mixture and a homogenous mixing.

NOTES:

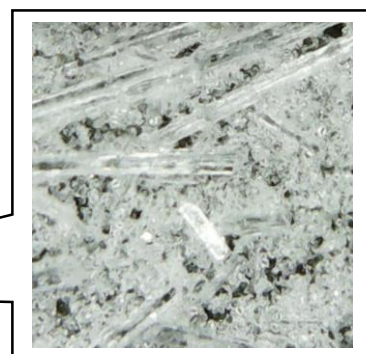
- * AXEL CRYSTLE 126AG is compatible with most concrete materials or admixtures e.g. cement, water reducing agent, silica sand.
- * Setting times of concrete might be affected by the chemical and physical composition of ingredients, temperature of concrete and climatic conditions. A prior site mix is recommended to carry out for assess the effect.
- * **DO NOT** add dry AXEL CRYSTLE 126AG powder directly to wet mixed concrete as this may cause clumping and thorough dispersion will not occur. Well-mixing is important for optimum product's performance. Ensure AXEL CRYSTLE 126AG is mixed homogeneously in concrete mixture before installation.
- * Consult safety data sheet (SDS) or refer to the packaging for safety use and precautions instruction.
- * Contact Axel Technical Service Department for additional information or special performance characteristics on this product.

TECHNICAL SPECIFICATIONS

No. of components	One
Appearance	Grey powder
Specific gravity	Approximately 2-2.4 kg/cm ³
Toxicity	Non toxic

Crystallization Properties

- * Digital microscope scanning at 1000X magnifications



Crystalline formation

CRYSTLE 126AG

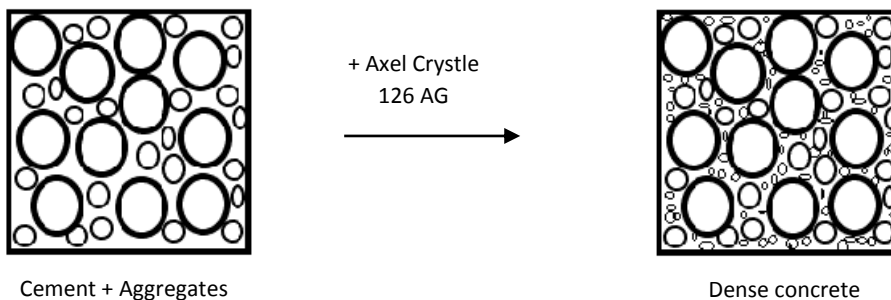
Cementitious Crystalline
Waterproofing Admixture

AXEL CRYSTLE 126AG contains special active chemical which reacts with the by-products of cement hydration like calcium hydroxide, sulphates and carbonates of sodium potassium, allow a chemical reaction takes place to form insoluble crystals in the presence of moisture.

As long as moisture remain present, these long, needle like crystals will continue grow in the concrete. With this continuous crystallization mechanism, pores, capillaries, voids and micro-cracks in concrete will be blocked out. In the absence of moisture, it will remain inactive until additional water enters through new crack causes the crystallization begins again. The crystalline formation also improves the self-sealing properties of concrete up to 0.4mm.

Compressive Strength

AXEL CRYSTLE 126AG with fine particle powder, added into concrete to fill up the pores among cement and aggregates. The denseness of concrete increases by voids get reduced and enhances the concrete's strength. Besides of its fine particle size properties, chemical reaction of **AXEL CRYSTLE 126AG** with by-products of cement hydration form crystalline materials also fill the voids in concrete thus improve the concrete's strength.



* BS EN 12390-Part 3:2009 Testing hardened concrete. Compressive strength of test specimens.

Concrete cube samples treated with 1 % of **AXEL CRYSTLE 126AG** were tested for compressive strength at 28 days compared against control samples. Samples containing **AXEL CRYSTLE 126AG** can achieve compressive strength up to 55 Mpa meanwhile 44 Mpa strength achieved by control samples. Result shows a positive impact on strength.

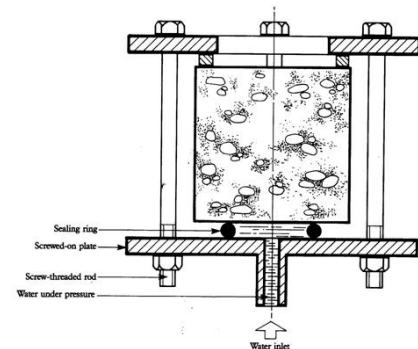
Water Permeability

Porosity influences the permeability of concrete. Lesser the pores, lower the water permeability. With the fine particles and crystalline properties of **AXEL CRYSTLE 126AG**, concrete pores are significantly reduced thus lower down the water permeability of concrete, become more durable and waterproofing.

* BS EN 12390-8: 2009 Testing Hardened Concrete Part 8: Depth of penetration of water under pressure, SIRIM QAS International Sdn Bhd, Malaysia.

A permeability test was conducted to gives a measure of the resistance of concrete against the penetration of water exerting pressure. Concrete samples containing **AXEL CRYSTLE 126AG** showed a result of 5mm depth penetration under water pressure of $500 \pm 50 \text{ kPa}$ for 72 ± 2 hours and did not show any leakage or visible defects during test period.

According to Concrete Society "Permeability Testing of Site Concrete", the maximum allowable depths for water penetration to consider to be under LOW concrete permeability or absorption is less than 30 mm, penetration depth of 30 – 60 mm under an AVERGAE level, more than 60 mm under HIGH level.



Concrete Durability

Concrete deterioration can be due to several reasons. The corrosion of reinforcing steel is the leading cause of deterioration in concrete. When steel corrodes, the formation of rust occupies a greater volume than steel. This expansion creates tensile stresses in the concrete, which eventually cause cracking, delamination and spalling.

Exposure of reinforced concrete to chloride ions is the primary cause of premature corrosion of steel reinforcement. Chlorides dissolved in water and permeate through sound concrete or reach the steel through cracks, cause steel corrosion with the presence of oxygen and moisture.

With crystalline formation and self-sealing of **AXEL CRYSTLE 126AG** in concrete, penetration rate of chlorides significantly reduced and thereby prolong the concrete lifespan.

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use. Hardened and or cured material can only be mechanically removed.

SHELF LIFE

12 months from the date of production if stored properly in original, unopened and undamaged sealed packaging in dry conditions.

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