



“Concrete Waterproofing by Crystallization™” or “Concrete Durability Enhancement by Crystallization™” using a Catalytic, Crystalline Admixture.

The admixture shall conform to the requirements of AS 1478.1, “Chemical Admixtures for Concrete”, Type SN, Special Purpose Admixture and be of the dry, cementitious powder type, known as “Concrete Waterproofing by Crystallization™” or “Concrete Durability Enhancement by Crystallization™”. When introduced to the concrete, the admixture shall cause a catalytic, multiplicative crystalline growth response, whereby during the cement hydration process, the crystalline complex reacts with various metal oxides and salts (including potassium, unhydrated and partially hydrated cement particulate) as well as, but not only with, calcium hydroxide regardless of the cement type or blend. (Prescriptive mixes are not a prerequisite for the catalytic admixtures performance.)

The catalytic additive shall remain reactive whenever moisture is available within the concrete.

The catalytic additive, when added to concrete as laid out in current specifications, will not detract from normal plastic and hardened concrete characteristics.

The catalytic crystalline waterproofing admixture shall cause the chemical control and permanent filling of capillaries, bleed tracts and small voids within the concrete with a multiplicative, insoluble crystalline growth which:

- Is resistant to greater than 106 metres of hydrostatic pressure
- Is able to ‘bridge’ and seal static cracks of up to point four of a millimetre (0.4mm) in width
- Is tolerant to a pH range of between 3.0 and 11.0, in constant contact
- Is unaffected by temperatures ranging from –32°C to +130°C, in constant temperature
- Is not affected by humidity, ultraviolet rays or oxygen levels (oxidisation)
- Will prevent the penetration and movement of chloride ions within the concrete to below the level necessary to cause electrolytic corrosion of the reinforcement steel.

The catalytic crystalline waterproofing admixture shall meet the following performance standards:

Requirement	Standard for Testing	Criteria
A. Permeability	ACCI (Modified Taywood Method)	Achieved permeability coefficient less than 5.0×10^{-14} considered as Very Good
B. Suitable for use in Potable Water	AS/NZ 4020 - 2005	“Products for use in Contact with Drinking Water”
C. Rapid Chloride Ion Penetration	ASTM C1202 (CSIRO Modified)	Less than 600 coulombs
D. Sulphate Resistance	AS 2350.14	Less than 250 microstrain (25% reduction in expansion from the control mix)
E. Chemical Admixture for Concrete,	AS 1478.1 - 2000	Type-SN, Special Purpose Admixture Mortar, and Grout