

CE EN 934-2

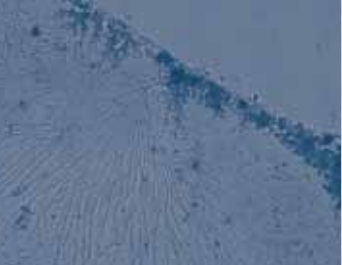
ASTM C494 TYPE S

VANDEX AM 10 CRYSTALLINE ADMIXTURE

ANY CONCRETE WE IMPROVE!

Vandex[®]

WATERPROOFING SINCE 1946



CHALLENGE – WATERPROOF CONCRETE STRUCTURES

Concrete is the most important building material in construction industry. Expectations are high: as concrete have to resist heat, frost and water, and chemical attack from carbon dioxide gases, chloride ions and sulphates from aggressive urban environments. In particular water can cause severe damage to concrete structures – be it by water ingress or seepage.

Waterproof concrete is therefore a crucial factor not only influencing the durability of concrete but the life expectancy of the whole structure.

Vandex is proud of contributing with proven waterproofing solutions in the preservation of building value.

VANDEX INVENTED AN INDUSTRY – THE FIRST CRYSTALLINE PATENT IN THE WORLD

The German patent confirmation from 1952. In 1943 the Danish chemist Lauritz Jensen patented the new crystalline active concrete waterproofing method. In 1946 he founded his first company and called it VANDEX („water out“).



CONCRETE AND INGRESS OF WATER – CRACKS & PORES

Concrete contains millions of capillary pores and hairline cracks, which allow water to penetrate into and seep through the concrete. This phenomenon is commonly described as “capillary absorption”.

Capillary absorption is caused when water is present on one side of the concrete but only if there is a humidity

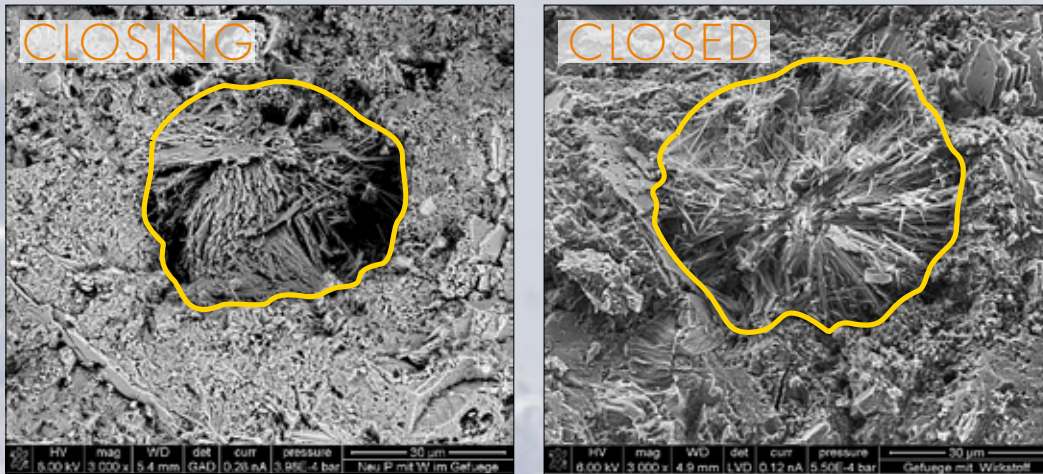
difference between the two sides of the concrete. The result is dampness on the dry side of the concrete, and particularly in the case of sub-ground structures, visible water infiltration. In combination with oxygen and chloride ions corrosion of reinforcement steel with subsequent concrete cracking and spalling is unavoidable.

THE INTEGRAL SOLUTION: VANDEX AM 10 CRYSTALLINE CONCRETE ADMIX

Traditionally concrete structures are waterproofed on the outer surface. Waterproof coatings on the surface of concrete can easily be mechanically or chemically damaged. Punctured waterproofing is the most common cause of performance failing.

VANDEX AM 10 is an integral crystalline admixture powder specifically formulated to interact with concrete capillary pore structures to provide a waterproofing system that is a permanent part of the concrete matrix.

30 μm – THE LENGTH OF A CRYSTAL



Pore space completely closed by crystals, length of the crystals is up to 30 μm .
Compared to a sample without VANDEX AM 10 the crystals are 10 times longer.

NEW CRYSTALLINE WATERPROOFING AND WATER REDUCING ADMIXTURE TECHNOLOGY FOR CONSTRUCTION

VANDEX AM 10 – CRYSTALLINE WATERPROOFING ADMIXTURE FOR CONCRETE

- integral waterproofing
- permanent system
- improving concrete properties
- dry powder – easy to use
- CE EN 934-2
- ASTM C494 Type S

The VANDEX AM 10 crystalline admixture is a unique product in the world, as it fulfills ASTM (North American) as well as CE (European) admixture standards.

Impressum: Pictures of the crystal formations in this brochure are all unique to VANDEX AM 10. Digital photomicrographs of the crystals were produced by the Petrographic Laboratory of the Euclid Chemical Company USA. The scanning electron photomicrographs were produced by a European University in 2012.





A STRUCTURAL WATERPROOFING CONFIRMED



EN 12390-8

Penetration of water under 5 bar hydrostatic pressure for 72 h. Immediately after this the specimens have been broken and treated by phenolphthalein which colors the water penetrated areas violet. With this coloration the depth of water penetration has been measured.



CRD C48-92

No water leakage at 13.8 bar hydrostatic pressure.



DIN 1048

Waterproofing test method to determine depth of water penetration. 6×6 " specimen exposed to 72 psi (5 bar) head pressure for 72 hours. Cylinder is split in half and depth of water penetration is measured



TECHNICAL DATA SUMMARISED

Test type	Method	Test parameters	Performance to control
Pressurized water penetration	EN 12390-8	1 % dosage	passed
Water penetration	DIN 1048	5 bar (72 psi) head pressure	40% reduction
Water permeability	CRD C48-92	13.8 bar (200 psi) head pressure	>70% reduction
Capillary absorption	ASTM C-1585		>40% reduction
Compressive strength	ASTM C-39		equal to and up to 8% increase
Resistance to chloride penetration	ASTM C1202		10% improvement
Length change	ASTM C-157		up to 20% reduction
Sulphate resistance	ASTM C-1012	6 months	33% improvement
Admixtures for concrete	ASTM C-494	type S, performance	passed
Admixtures for concrete	EN 934-2	water reducing/plasticizing	passed

B CRYSTALLINE WATER REDUCING/CONCRETE PLASTICIZING ADMIXTURE EN 934-2:T2

VANDEX AM 10 is an approved integral crystalline water reducing/concrete plasticizing admixture EN 934-2:T2 powder specifically formulated to interact with concrete capillary pore structures. Concrete treated with VANDEX AM 10 also resist high water pressure as it is a permanent part of the concrete matrix.

VANDEX AM 10 can be used in above and below-grade applications.

Chloride ion content	≤ 0.1 %	CE 1301
Alkali content	≤ 6.5 M %	
Corrosion behaviour	No corrosion acc. to EN 480-14 observed	Vandex Isoliermittel-GmbH Industriestr. 19-23 DE-21493 Schwarzenbek 15 410 EN 934-2:2009+A1:2012 Water reducing/plasticizing admixture for concrete
Compressive strength	at 7 and 28 days: Test mix ≥ 110 % of control mix	
Water reduction	In test mix ≥ 5 % compared with control mix	
Air content	Test mix ≤ 2 % by volume above control mix	
Dangerous substances	cf. Safety Data Sheet REACH	



C LATEST SCIENTIFIC CONFIRMATION OF VANDEX CRYSTALLINE PERFORMANCE

Permeability Testing, CRD C48-92

At the completion of the test, the specimens (15.2 cm × 15.2 cm) did not exhibit any water leakage. All specimens were tested for 14 days under 200 psi (462 feet of head pressure [13.8 bar]). An independent laboratory test report is available upon request.

Water Penetration, DIN 1048

Specimens (15.2 cm × 15.2 cm) exhibited an average water penetration of 22 mm when tested for 72 hours under 72 psi (166 feet of head pressure [5.0 bar]). An independent laboratory test report is available upon request.

Compressive Strength, psi (MPa) ASTM C 39

7 days..... 3,560 (24.5)
28 days.....4,930 (34.0)

Freeze/Thaw Resistance, ASTM C 666

300 cycles93.8 % Relative Durability Factor

Flexural Strength, psi (MPa) ASTM C 78

7 days..... 737 (5.1)
28 days.....778 (5.4)

Rapid Chloride Permeability, ASTM C 1202

An improvement of 10% compared to control sample.

Chemical Admixtures, ASTM C 494 Type S, Specific Performance

Reported are the chemical and/or physical properties of cement and aggregates used and the results obtained in testing. VANDEX AM 10 meets the requirements for a Type S, Special Performance, chemical admixture as specified in ASTM C 494, "Standard Specifications for Chemical Admixtures in Concrete".



VANDEX AM 10

- is added to the concrete at the batching plant.
- Consumption: 1-2 % BWC

HOW TO USE ...

VANDEX AM 10 can be used in drum mixed and central batched concrete applications. It should be added to the initial batching sequence.

1. READY MIX PLANT – DRY BATCH

VANDEX AM 10 powder is placed in the drum of the ready-mix truck. At the batching plant is the balance of the materials added according to concrete mix design and regular batching practice.

Mix materials for a minimum of 10 minutes. The product must be completely dispersed in the mix in order to obtain a homogeneous mixture.

2. SITE MIXING

VANDEX AM 10 is added to the aggregate and sand, then mixed thoroughly for two to three minutes before adding the cement and water.

When an additional superplasticiser is required, it should be added in accordance with the superplasticiser manufacturer's instructions.

The resulting concrete should be mixed for a further five minutes to ensure even distribution of the product throughout the concrete.

It should be noted that mixing times may vary depending on the mixing equipment used.

Where the product is to be added to concrete on site, care must be taken to ensure that adequate mix control is available.

3. PRECAST AND OTHER MIXING REQUESTS, please consult Vandex technical services

Under normal conditions will VANDEX AM 10 provide a normal set concrete. Concrete containing VANDEX AM 10 may develop higher ultimate strengths than plain concrete. Do not add VANDEX AM 10 at the end of the batching sequence, as this can result in lumps which leads to VANDEX AM 10 not being homogenously mixed into the concrete.

Trial mixes should be carried out under project conditions to confirm concrete performance.



VANDEX AM 10 added at the batching plant.



Batching plant



Concrete pouring

AREAS OF APPLICATION



Water containment structures



Parking structures



Waste water treatment facilities



Foundations and basements



Metros and subways



Tunnels

CRYSTALLINE WATERPROOFING



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in more than 60 countries.
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construction"



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GROWTH

