

Self-Healing Crystalline Waterproofing Admix 204

DISCOVER A NEW WAY TO BUILD

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CRYSTAL-KRETE™ Smart Materials

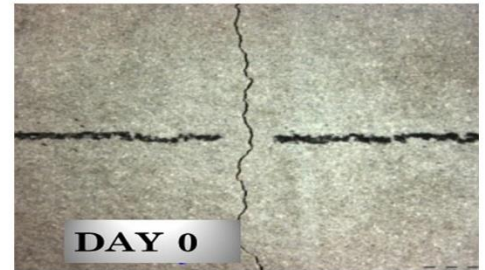
SMART **M**ATERIALS



SMART CONCRETE

Self-Healing Crystalline
Waterproofing Admix 204

25 Kg





CRYSTAL-KRETE™

INNOVATIVE MATERIALS

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16 Pattanakarn 54
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CRYSTAL-KRETE™

SELF-HEALING CRYSTALLINE WATERPROOFING ADMIXTURE 204

Description and Characteristics

Crystal-Krete™ ADMIX 204 (integral crystalline waterproofing powder admix) is added to the concrete mix at the time of batching. Crystal-Krete ADMIX 204 consists of Portland cement, very fine treated silica sand and various active, proprietary chemicals and additives. These active agents react with the moisture in fresh concrete with the by-products of cement hydration to cause a reaction, which generates a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete. Thus, the concrete becomes permanently sealed against the penetration of water or liquids from any direction. The concrete is also protected from deterioration due to harsh environmental conditions.

Advantages

- Can seal hair line cracks up to 0.6mm
- Increased compressive strength
- Resists extreme hydrostatic pressure from either positive or negative surface of the concrete slab
- Reduced Chloride Ion Penetration
- Water Permeability significantly reduced
- Becomes an integral part of the concrete
- Highly resistant to aggressive chemicals
- Allow concrete to breathe
- Non-toxic and VOC Free
- Less expensive than traditional methods
- Permanent
- Added to the concrete at the time of batching and therefore is not subject to climatic restraints
- Reduces construction scheduling time

USES

Crystal-Krete™ Admix 204 can be used for the following construction applications:

- Sewage and water treatment plants
- Secondary containment structures
- Tunnel and Subway Systems
- Underground vaults
- Foundations
- Parking structures
- Swimming pools and Reservoirs
- Pre-cast, cast-in-place and Shotcrete applications

Technical Specifications

Appearance & Physical State	Grey Powder
Bulk Density g/cm ³	1.100±0.10
Chloride Content	<0.1 %
Coefficient of Water Permeability DIN 1048 Part V @16bar Pressure	Reduce Greater than 90% as per control
Drying Shrinkage	Reduce 25 % as per control
Compressive Strength 28 Days	Increased up to 8 % as per control
Flexural Strength 28 Days	Increased up to 8 % as per control

Application Instruction

Ready Mix Plant - Dry Batch Operation: Add CRYSTAL-KRETE ADMIX 204 in powder form to the drum of the ready-mix truck. Drive the truck under the batch plant and add 60% - 70% of the required water along with 136 - 227 kg of aggregate. Mix the materials for 2-3 minutes to ensure the CRYSTAL-KRETE ADMIX 204 is distributed evenly throughout the mix water. Add the balance of materials to the ready-mix truck in accordance with standard batching practices.

Ready Mix Plant - Central Mix Operation: Mix CRYSTAL-KRETE ADMIX 204 with water to form very thin slurry 25 kg of powder mixed with 31.50 Liters of water. Pour the required amount of material into the drum of the ready-mix truck. The aggregate, cement and water should be batched and mixed in the plant in accordance with standard practices (taking into account the quantity of water that has already been placed in the ready-mix truck). Pour the concrete into the truck and mix for at least 5 minutes to ensure even distribution of CRYSTAL-KRETE ADMIX 204 throughout the concrete.

Precast Batch Plant: Add CRYSTAL-KRETE ADMIX 204 to the aggregates and sand, then mix thoroughly for 2-3 minutes before adding the cement and water. The total concrete mass should be blended using standard practices.

NOTE: CRYSTAL-KRETE ADMIX 204 must be added to the concrete at the time of batching. It is important to obtain a homogeneous mixture of CRYSTAL-KRETE ADMIX 204 with the concrete. Therefore, do not add dry CRYSTAL-KRETE ADMIX 204 powder directly to wet concrete as this may cause clumping and thorough dispersion will not occur.

Setting Time and Strength: The setting time of concrete is affected by the chemical and physical composition of ingredients, temperature of the concrete and climatic conditions. Retardation of set may occur when using CRYSTAL-KRETE ADMIX 204.

The amount of retardation will depend upon the concrete mix design and the dosage rate of CRYSTAL-KRETE ADMIX 204. However, under normal conditions, CRYSTAL-KRETE ADMIX 204 will provide a normal set concrete. Concrete containing CRYSTAL-KRETE ADMIX 204 may develop higher ultimate strengths than plain concrete. Trial mixes should be carried out under project conditions to determine setting time and strength of the concrete. Concrete treated with CRYSTAL-KRETE ADMIX 204 should be placed and finished in accordance with good concrete practices.

DOSES

0.8-1.0% by weight of cement. Consult with ICM Technical department for assistance in verifying the appropriate dosage rates.

PACKAGING

CRYSTAL-KRETE ADMIX 204 is supplied in 25Kg HDPE moisture resistance bag.

SHELF LIFE

Six (6) Months in original unopened sealed condition.

STORAGE & HANDLING

Material should be stored in moisture free, cool and dry s hade. Please do not use hook and handle carefully during transport.

SAFETY PRECAUTIONS

Wear all PPE's at the of Application like Safety boot, Safety Goggle, Hand Gloves, Mask and avoided with contact of Skin and Eyes. Any direct skin contamination with the hardeners should be washed off immediately with soap and water.



STEDRANT TECHNOCLINIC PVT. LTD.

(Construction Materials Testing Laboratory)

Lab: # 39/5, Govardhan Garden, J C Industrial Area, Yelechenahalli, off. Kanakapura Main Road,
Bangalore - 560062. Ph.: 080 26860348. E-mail : labblr@stedrant.com CIN: U74999KA2017PTC100477
GST No.: 29AAAYCS1231L1ZQ www.stedrant.com

STPL

DOC: STPL/RF/05/spl

Ref: STPL/BLR/186/3/2025/R

Test order dated: 07.03.2025

M/s. ECMAS Construction Chemicals Pvt. Ltd.

7-4-124 Gaganpahad, International Airport Road

Hyderabad - 500 052

Page 1 of 1

Date: 07.04.2025

TEST REPORT

Source of sample : Sample supplied by the customer
Date of receipt of the tests sample : 07.03.2025
Customer's Reference : Letter dated: 05.03.2025
UIN : 2507053
Sample Description : **ECMACRYSTAL ADMIX 204**
Project : Not furnished
Water/Powder Ratio # : 0.45
Control mix design proportion (kg/m³) : Cement – 350 kg, Fine aggregate-780 kg, 20mm – 660 kg,
12mm – 440 kg, Water – 157.5 kg
With Ecmacrystal admix 204 (0.8%) (kg/m³): Cement – 350 kg, Fine aggregate-780 kg, 20mm – 660 kg,
12mm – 440 kg, Water – 157.5 kg, Admixture – 2.80 kg/m³
Date of test : 07.03.2025 to 07.04.2025
Condition of samples : Satisfactory

TEST RESULTS:

Sl. No.	Test Conducted	Test Result		Test Method
1	Bulk Density (kg/m ³)	1.05		Laboratory Developed Method
2	Max. Alkali content a) Sodium oxide Na ₂ O b) Potassium oxide K ₂ O	0.020		IS 4032-1985
		0.028		
3	Chloride content (% by mass)	0.015		IS: 6925-1973
4	Setting time (Minutes) a) Initial setting b) Final setting	Control	Admix 204 with 0.8% dosage	IS 4032 Part 5 - 1983
		5 hours 35 minutes 8 hours 40 minutes	5 hours 50 minutes 8 hours 55 minutes	
5	Compressive strength (MPa) @ 28 days	Control	Admix 204 with 0.8% dosage	ASTM C 109-99
		34.6	35.2	
6	Water Absorption (%) @ 72 hours	Control	Admix 204 with 0.8% dosage	BS 1881 Part 122 - 1983
		7	1.5	
		6	1.4	
		8	1.2	
		Avg	7	1.4
7	Water Permeability (16 bar pressure for 72 hours) Depth of penetration – mm)	Control	Admix 204 with 0.8% dosage	DIN 1048 Part 5 - 1993
		22.6	1.5	
		20.2	1.3	
		19.5	1.7	
		Avg	20.8	1.5
8	Rapid Chloride penetration test (RCPT)	Control	Admix 204 with 0.8% dosage	ASTM C 1202-2019
		2285	914	
		2375	950	
		2400	960	
		Avg	2353	941

As furnished by the customer.

- Note:
1. The results relate only to the items tested.
 2. Report shall not be reproduced except in full, without the written approval of the lab.
 3. Any correction invalidates this report.

for **STEDRANT TECHNOCLINIC PVT. LTD**

End of the report

(Signature)
S. Srinivas Ramanujan
Quality Manager

Corporate Office :

"Suvak Pride" # 95, Model House Street, Basavanagudi,
Bangalore - 560 004. Ph : 080 26629992

Hyderabad Off./ Lab :

Shed No. F-3/A, Street No. 10, IDA, Nacharam, Hyderabad - 500076.

Mob : +91 9000085790, +91 9000095790, +91 9908875790, +91 9908065790

CHLORIDE ION PENETRATION TEST



Format No: SALLGN/TRF/GEN

Issue No:01, Issue Date: 01-04-2017

Page 1 of 2

TEST REPORT

CIN:U74220DL1998PLC092698

Test Report Issued To:

ECMAS CONSTRUCTION CHEMICALS PRIVATE LIMITED.

7-4-124, GAGANPAHAD., INTERNATIONAL AIRPORT ROAD,, HYDERABAD, TELANGANA , INDIA, 500052,

Test Report No: **N190121026/N190121026-1**

Date of Issue: **25-Feb-2019**



Sample Booking/Receipt Date: **21-Jan-2019**

Date of Start of Testing: **22-Jan-2019**

Date of Completion of Test: **22-Feb-2019**

Customer Relationship Number

53573

Sample Description :

CUBE CASTING CHARGES



Customer Reference No :

Partial Report

Kind Attention :

MR.ANIL KR VERMA

E-Mail:

anil.verma@ecmas.co.in

Contact No:

9121149836

Sample Condition :

NA

Sample Quantity (Approx) :

NA

Sample Size (Approx) :

NA

SAMPLE NOT DRAWN BY OUR LABORATORY. THE RESULTS RELATE ONLY TO THE ITEMS TESTED

Digitally signed
by Anshul
Chaudhary
Date: 2019.02.25
15:17:43 +05:30

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ID-N190121026-1


A. Specimen with ADMIX 204 Crystalline Admixture

<u>S.No.</u>	<u>Date of Casting</u>	<u>Date of Testing</u>	<u>Charge Passed (Coulombs)</u>	<u>Chloride Ion Penetration</u>	<u>Test Method</u>
1.	22.01.2019	21.02.2019	590	Very Low	ASTM C- 1202
2.	22.01.2019	21.02.2019	610	Very Low	
3.	22.01.2019	21.02.2019	607	Very Low	
Average			602	Very Low	

B. Control Specimen without admixture

<u>S.No.</u>	<u>Date of Casting</u>	<u>Date of Testing</u>	<u>Charge Passed (Coulombs)</u>	<u>Chloride Ion Penetration</u>	<u>Test Method</u>
1.	22.01.2019	21.02.2019	1320	Low	ASTM C- 1202
2.	22.01.2019	21.02.2019	1270	Low	
3.	22.01.2019	21.02.2019	1215	Low	
Average			1268	Low	

-- End of Test Report --



Analyst Signature



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Chaudhary
Date: 2019.02.25
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Authorised Signatory

COEFFICIENT WATER PERMEABILITY TEST



Format No: SALLGN/TRF/GEN
Issue No:01, Issue Date: 01-04-2017
Page 1 of 3

CIN:U74220DL1998PLC092698

TEST REPORT

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ECMAS CONSTRUCTION CHEMICALS PRIVATE LIMITED.

7-4-124, GAGANPAHAD., INTERNATIONAL AIRPORT ROAD., HYDERABAD, TELANGANA , INDIA, 500052,

Test Report No: **N190121026/N190121026-1**

Date of Issue: **15-Mar-2019**



Sample Booking/Receipt Date: **21-Jan-2019**

Date of Start of Testing: **22-Jan-2019**

Date of Completion of Test: **12-Mar-2019**

Customer Relationship Number **53573**

Sample Description :

CUBE CASTING CHARGES



Customer Reference No :

Partial Report

Kind Attention : **MR.ANIL KR VERMA**

E-Mail: **anil.verma@ecmas.co.in**

Contact No: **9121149836**

Sample Condition : **NA**

Sample Quantity (Approx) : **NA**

Sample Size (Approx) : **NA**

SAMPLE NOT DRAWN BY OUR LABORATORY. THE RESULTS RELATE ONLY TO THE ITEMS TESTED

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ID-N190121026-1

CONCRETE(M-35)

Sl. No.	Tests Parameters	Date of Casting	Observed Results			Tests Methods
<u>Water Permeability test</u>						
1.	<u>Control</u>		<u>Initial Wt.</u> <u>gm</u>	<u>Final Wt.</u> <u>gm</u>	<u>Water Permeability, mm</u>	DIN 1048 (Pt-5)- 1991
	A.	22.01.2019	8380	8410	22.9	
	B.	22.01.2019	8390	8415	21.8	
	C.	22.01.2019	8310	8338	24.6	
	Average-				23.1	
2.	<u>ADMIX 204 Treated Sample</u>		<u>Initial Wt.</u> <u>gm</u>	<u>Final Wt.</u> <u>gm</u>	<u>Water Permeability, mm</u>	Darcy's Law
	A.	22.01.2019	8350	8355	2.3	
	B.	22.01.2019	8345	8350	2.7	
	C.	22.01.2019	8360	8366	1.8	
	Average-				2.27	
2.	<u>Coefficient of Permeability Test</u>					Darcy's Law
	Control				$1.659048E^{-14}$	
	Admix 204 Treated Sample				$3.14531E^{-16}$	
	Reduction in Permeability Coefficient Admix 204 Sample over Control Sample				98.1 %	

Note: - Admix Dosage 0.8% by weight of cement.



Analyst Signature



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ID-N180929026-1

Methodology of Water Permeability Test (Four Cycles) As per DIN 1048 Part V Guidelines.

1. Each type of concrete M-35 Grade Control and ADMIX 204 Crystalline Admixture treated samples were Casted and tested as per DIN 1048 Part V.
2. 3 specimens of size (150x150x150 mm) of each type of concrete were tested as per Din 1048.
3. Initial weight of each specimen was taken.
4. Set of 3 cubes were tested in Water Permeability Equipment.
5. Each Specimen was subjected to 5 bar water pressure for 72 hrs. and water pressure was kept constant throughout the test.
6. After 1st cycle weight of Specimen is taken and specimen is kept for drying 48 hr.
7. The specimen was again subjected to 5 bar water pressure for 72 hrs. and test was repeated for 4 cycles as above.
8. After completion of 4 cycle Final weight of Specimen were taken.
9. The Specimen were then Split Down from Centre.
10. The maximum depth of penetration of each Specimen is measured.

-- End of Test Report --



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SETTING TIME AND STRENGTH REPORT



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CIN:U74220DL1998PLC092698

Format No: SALLGN/TRF/GEN

Issue No:01, Issue Date: 01-04-2017

Page 1 of 2

TEST REPORT

Test Report Issued To:

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7-4-124, GAGANPAHAD,, INTERNATIONAL AIRPORT ROAD,, HYDERABAD, TELANGANA , INDIA, 500052,

Test Report No: **N190121026/N190121026-1**

Date of Issue: **12-Mar-2019**



Sample Booking/Receipt Date: **21-Jan-2019**

Date of Start of Testing: **22-Jan-2019**

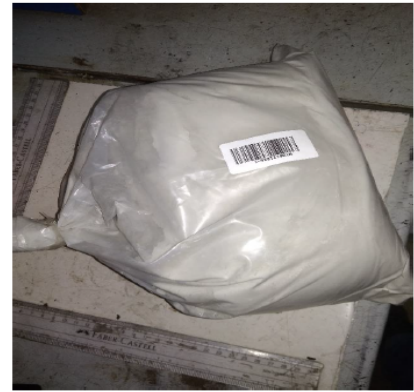
Date of Completion of Test: **12-Mar-2019**

Customer Relationship Number

53573

Sample Description :

CUBE CASTING CHARGES



Customer Reference No :

Kind Attention : MR.ANIL KR VERMA

E-Mail: anil.verma@ecmas.co.in

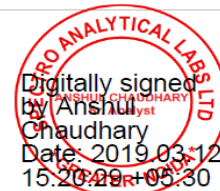
Contact No: 9121149836

Sample Condition : NA

Sample Quantity (Approx) : NA

Sample Size (Approx) : NA

SAMPLE NOT DRAWN BY OUR LABORATORY. THE RESULTS RELATE ONLY TO THE ITEMS TESTED



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ID No. N190121026-1

Crystalline water Proofing Admixture

<u>S.No</u>	<u>Test parameters</u>	<u>Observed Value</u>	<u>Test Method</u>
1.	Time of setting, Hours		ASTM C 494
	A. Initial		
	Control	5.20	
	Sample	5.50	
	Deviation from control Sample	+0.30	
	B. Final		
	Control	7.30	
	Sample	7.55	
	Deviation from control Sample	+0.25	
2.	Compressive Strength, Mpa		ASTM C 494
	At 3 days		
	Control	15.2	
	Sample	17.5	
	% Over Control	115.0	
	At 7 days		
	Control	21.0	
	Sample	23.1	
	% Over Control	110.0	

-- End of Test Report --

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WATER PERMEABILITY



Format No: SALLGN/TRF/GEN

Issue No:01, Issue Date: 01-04-2017

Page 1 of 2

CIN:U74220DL1998PLC092698

TEST REPORT

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Test Report No:

N190121026/N190121026-1

Date of Issue:

25-Mar-2019



Sample Booking/Receipt Date:

21-Jan-2019

Date of Start of Testing:

22-Jan-2019

Date of Completion of Test:

23-Mar-2019

Customer Relationship Number

53573

Sample Description :

CUBE CASTING CHARGES



Customer Reference No :

Partial Report

Kind Attention :

MR.ANIL KR VERMA

E-Mail:

anil.verma@ecmas.co.in

Contact No:

9121149836

Sample Condition :

NA

Sample Quantity (Approx) :

NA

Sample Size (Approx) :

NA

SAMPLE NOT DRAWN BY OUR LABORATORY. THE RESULTS RELATE ONLY TO THE ITEMS TESTED

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ID-190121026-1

Scope of Job :

Performing water permeability test up to 16 bar pressure on CRYSTALLINE WATER PROOFING COMPOUND (ADMIX 204) concrete cube. Test procedure as per DIN 1048 part 5 1991 guidelines.

TEST METHOD & SPECIFICATION:

Concrete Cube of M-35 Grade Casted With 0.8 % dosage of ADMIX 204 crystalline water proofing compound and Cured for 28 days. Permeability test started on cube after 28 days as per DIN 1048 part 5 after that 1 bar increased for every 48 hours till the 16-bar pressure achieved. After that water Permeability checked.

Date of casting: - 22/01/2019

Observations	
S.No.	Water Penetration Depth in mm
1	0.0
2	0.0
3	0.0
Average	0.0

Conclusion: The water permeability of concrete observed ZERO at 16-bar as per DIN 1048 Pt-5:1991 Guidelines.

-- End of Test Report --



Analyst Signature



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Date: 2019.03.25
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