



## TECHNICAL DATASHEET

PRODUCT: RUST-X CCI 4207 Concrete Inhibitor Coating/Admixture

### Product Description

RUST-X CCI 4207 is a dual purpose, multi-modal acting bipolar and migratory corrosion inhibitor which acts in vapor phase as well as in contact phase to reduce rebar corrosion in concrete.

The CCI 4207 consists of a cocktail of anodic and cathodic inhibitors that work simultaneously to reduce the corrosion rate and prevent carbonation, spalling, cracks and damage to the infrastructure such as bridges, buildings, road networks, dams etc.

The CCI 4207 can be mixed with concrete as an admixture or sprayed on the existing structures and due to capillary absorption action migrates or flows inwards into the concrete. The liquid has a high affinity towards the iron rebar and forms a coat over the rebar which stays for a long period and provides excellent protection to the rebar.

Various tests have been performed in the laboratory and in the field to confirm the efficacy of the inhibitors to reduce corrosion rate and improve life of infrastructure.

The special formulation contains a blend of inhibitors that work together in providing an excellent resistance to corrosion.

### Dosage

RUST-X CCI 4207 can be dosed at 1 L/m<sup>3</sup> to concrete

When surface applied it can be applied directly without diluting and allowed to penetrate in the concrete.

### Features

- Protects against corrosion, carbonation and chloride attack
- Easily migrates naturally by adsorption into the concrete
- Cocktail of corrosion inhibitors that work synergistically to drastically reduce corrosion and increase life of the structures
- Immediate reduction in corrosion rate can be noticed after application
- Water based solution is non-flammable
- Penetrates easily into un-coated concrete
- Can migrate up to 4 inches into concrete within 28 days
- Does not impart any colour to the concrete structure

### Application

- **IMPREGNATION:** Corrosion Inhibiting Liquid can be impregnated/surface applied by brush or spray on hardened concrete and migrates towards the rebar as it is adsorbed into the concrete. The application area may be washed a few times after 72 hours of application and then painted.
- **INJECTION:** It can also be injected into the concrete walls by drilling a hole into the concrete and then injecting the liquid into the walls. The injected liquid can then be sealed using concrete and allowed to migrate within the structure.
- **ADMIXTURE:** The Corrosion Inhibiting Liquid CCI 4207 can also be mixed with concrete as an admixture during construction.



# RUST-X USA

CONCRETE CORROSION INHIBITORS



## Properties

Appearance	Brown Liquid
pH	11-12
Non Volatile Content	40-50%
Density	1.1
Viscosity	>10 cSt
Smell	Mild Ammonical
Vapor Inhibiting Ability Test	Passes
Solubility	Soluble in Water and polar solvents

### DECLARATION

This Data sheet and information it contains is considered to be accurate at the date of printing. No representation or warranty, expressed or implied is made as to the accuracy or completeness of the data and information contained in this publication. It is the User's obligation to evaluate and use products safely and within the scope advised in the data sheet and to comply with all applicable laws and regulations

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Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. No representation or recommendation not contained herein shall have any force or effect unless in a written

## Testing

Modified Accelerated Corrosion Test Method – JIS 1535 Vapor Phase Corrosion Inhibition	Pass (Grade 3 BEST)
ASTM G 109 Effects of Chemical Admixtures on Corrosion	50% reduction in corrosion rate and hence extension of life of concrete infrastructure
IS 516-1959 Compressive Strength of Concrete for Standard Formulations	Pass
Determination of Chloride Content By Penetration ASTM B 1543	50% Reduction in Chloride Content after 90 days



**Test Report**

Report No.: 168  
ULR-TC636221000000156F – Chemical – Building Materials

Date: 04.02.2021

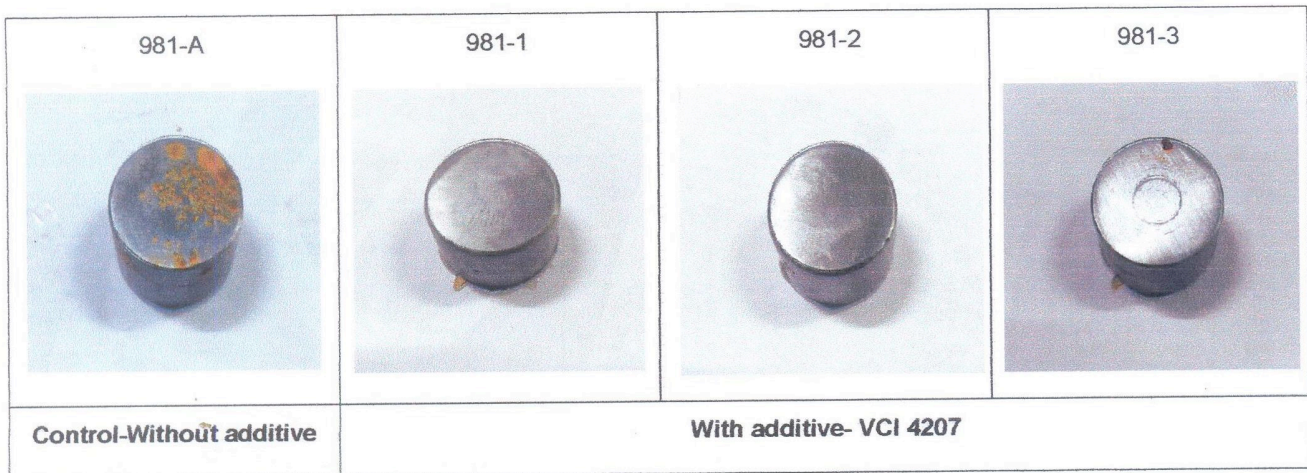
Invoice No.: G-315

Customer : Hi-Tech Intrnational  
Sample Description : Corrosion Inhibitor (Powder form)  
Customer's Reference : Letter dated-02.02.2021  
Customer id : VCI 4207  
e-cube id : 981  
Sample Condition : Satisfactory  
Test witnessed by : None

Date of Receipt: 02.02.2021  
Period of Testing: 03.02.2021 to 04.02.2021

**Modified Accelerated Corrosion Test (Method – JIS Z 1535)**

e-cube ID	Sample ID	Observations
981-A	Control- Without additive	Excessive corrosion spots
981-1	With additive	No corrosion
981-2	With additive	No corrosion
981-3	With additive	Minor corrosion spot



**Notes:**

1. Test results indicated above for the sample submitted by the client.
2. Test results may not be reproduced in part without the written permission of e-cube concrete consultants LLP.
3. We do not undertake any responsibility for any involvement in any type of litigation arising out of this report submitted by e-cube concrete consultants LLP.



For e-cube concrete consultants LLP

*Bhagyashree Katar Wani*

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## Test Report

Report No.: 467

Date: March 18, 2021

Invoice No. G-

ULR-TC636221000000443P - Mechanical - Building Materials

Customer : Hi-Tech International  
 Sample Description : Corrosion Inhibitor (Powder form)  
 Customer's Reference : Letter dated-02.02.2021  
 Customer id : VCI 4207  
 e-cube id : 1129  
 Sample Condition : Satisfactory  
 Test witnessed by : None

Date of Receipt: 02.02.2021

Period of Testing: 12.02.2021-12.03.2021

**Mix Proportions - M-35:**

Ingredient	Cement	C.S.S	10mm	20mm	Water	Admixture	
Source	UT OPC 53	Local	Local	Local	TMC	Mapei SX 542	Hi-Tech International
ecube-ID	480	INV-230	INV-231	INV-232	NA	INV-233	1129
Qty (kg/m <sup>3</sup> )	440	745	558	650	170	2.2	0
	440	745	558	650	170	2.2	0.2

**Reference Code: IS 1199**

		Initial	30 Mints
Workability (Slump Flow / Slump) mm	Control	180	60
	With Corrosion Inhibitor	210	85

**Reference Code: IS 516-1959 (reaffirmed 2004)**

		3 Days	7 Days	28 Days
Average Compressive strength (N/mm <sup>2</sup> )	Control	25.8	34.1	44.3
	With Corrosion Inhibitor	23.4	32.2	45.6

**Remarks on test method: Nil.**

Notes:-

- The above recommendations are based on the fine aggregates & coarse aggregates are at saturated surface dry conditions. At the time of concrete production, adjustments are required to be made for surface moisture or water absorption in the fine & coarse aggregates, as applicable.
- Test results may not be reproduced in part without the written permission of e-cube concrete consultants LLP.
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BNK/SSD/SK



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TC - 6362





## Test Report

Report No.: 612

Date: 08.04.2021

Invoice No.: G-459

Customer : Hi-Tech International

Sample Description : Corrosion Inhibitor (Powder form)

Customer's Reference : Letter dated-02.02.2021

Customer id : VCI 4207

e-cube id : 1129

Sample Condition : Satisfactory

Test witnessed by : None

Date of Receipt: 10.02.2021

Period of Testing: 06.03.2021 to 05.04.2021

## Evaluating Corrosion Test: ASTM G1-03

Sample Size : Nominal Length -40mm, Nominal Diameter-10mm

**Cleaning method:** Clark solution is prepared by dissolving 20 g of Antimony Trioxide & 50 g of Stannous Chloride in 1000 ml concentrated Hydrochloric acid, S.G. 1.18. After complete removal of corrosion products (5 minutes approximate), take out test pieces & wash in running water & finally with distilled water. Then wash the test pieces, with Acetone.

e-cube no	Initial weight (g)	Final weight (g)	Weight loss (g)	Area (cm <sup>2</sup> )	Corrosion rate (mills per year)	Average (mills per year)
Control-1	23.837	23.755	0.082	0.777	0.064	0.063
Control -2	23.413	23.328	0.085	0.771	0.067	
Control-3	24.031	23.958	0.073	0.777	0.057	
1129-1	24.717	24.673	0.044	0.777	0.035	0.038
1129-2	24.977	24.931	0.046	0.780	0.036	
1129-3	24.459	24.405	0.054	0.767	0.043	

## Notes:

- 1 Test results indicated above for the sample submitted by the client.
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For e-cube Concrete Consultants LLP



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## Test Report

Report No.: 1175

Date: 30.07.2021

Invoice No.: G-459

Customer : Hi-Tech International

Sample Description : Corrosion Inhibitor (Powder form)

Customer's Reference : Letter dated-02.02.2021

Customer id : VCI 4207

e-cube id : 1129

Sample Condition : Satisfactory

Test witnessed by : None

Date of Receipt: 10.02.2021

Period of Testing: 06.03.2021 to 24.07.2021

**Determination of Chloride Ion Penetration into Concrete by Ponding: ASTM 1543**

Mix Proportion by weight:

Material	Cement	C.S.S	10 mm	20 mm	Water	Admixture	Corrosion inhibitor
Source	OPC 53	Local	Local	Local	TMC	Mid PC	Hitech International
ecube ID	430	INV 230	INV 231	INV 232	--	INV 233	1129
Qty in kg/m <sup>3</sup>	440	745	558	650	170	2.2	0
	440	745	558	650	170	2.2	0.2

**Note: Admixture dosage provided by client.**

Chloride content as per IS 14959

Sr No.	ecube ID	Identification Mark	Depth	Chloride content (after 90 days), kg/m <sup>3</sup>	
1	1842-A	Control Trial No. 43	0-10	2.9	
2	1842-B		15-25	0.6	
3	1842-C		30-40	0.3	
4	1842-D		45-55	0.2	
				Sample 1	Sample 2
5	1848-A	With Corrosion inhibitor Trial No. 44	0-10	1.7	1.9
6	1848-B		15-25	0.2	0.4
7	1848-C		30-40	0.1	0.2
8	1848-D		45-55	0.1	0.1

Remarks on test method: Room temperature - 28°C

**Notes:**

- 1 Except corrosion inhibitor all other material used from laboratory stock, Test results indicated above for the sample submitted by the client.
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