



# CLASSIC DURA CONGUARD<sup>TM</sup>

Migrating Bipolar Corrosion inhibiting Admixture for Re-inforced concrete with cathodic & anodic protection

## Product:

**Classic Dura Conguard** highly recommended for all structures in re-inforced concrete, normal or pre-stressed in particular in aggressive situation like bridges, viaducts, exposed concrete facades. This product is certified that **CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE (CECRI-INDIA)**

## Used & Futures :

- Anodic and cathodic protection
- Contains multiple complex migrating corrosion inhibitors Contains passivating functions.
- Reduction of the chloride permeability
- Reduction of carbonation >85%
- Reduction of the corrosion potential >80%
- Highly effective even in presences of chloride salts increased concrete durability.
- It does not contains nitrites and chlorides

## Description:

**Classic Dura Conguard** liquid admixture composed out of reactive complex mixture of multi-functional corrosion inhibitors which would be migrating and interfacial with anodic and cathodic protection with a special efficiency in the nano-capillary of concrete and mortars. It can also be used to achieve better protection against re-reinforcement corrosion. It is active not only in contact with the metal, but also it migrates through the micro porosity of the concrete to reach the re-reinforcement of existing structures to ionize consequently provide cathodic and anodic protection.

**Classic Dura Conguard** is a superior technical solution to extend the life time expectancy of re-reinforcement concrete subjected to aggressive corrosion promoters such as oxygen, humidity, chlorides from de-icing salts or marine environments etc.,

## Packing

Available in 20 and 200 litre HDPE Containers.

## Dosage:

**Classic Dura Conguard** is normally recommended for use at a dosage rate of 2 Litre/m<sup>3</sup> for all the congested re-inforced concrete aggressive corrosion environments and chloride ions exposure of the structure etc.,

## How to Use:

### Compatibility

**Classic Dura Conguard** is compatible will all other range of admixtures in the same concrete mix. All admixtures should be added to the concrete separately and must not be mixed together prior to addition. The performance of concrete containing more than one admixture should be assessed by the trial mixes to ensure the desired combination of effects is obtained.

**Classic Dura Conguard** is suitable for use with all type of ordinary Portland Cement. Contact Primadonn for advice on to use with sulphate resisting cements and cement replacement materials.

## Dispensing:

The correct quantity of **Classic Dura Conguard** should be measured by means of a recommended dispenser. The admixture should than be added to the concrete with the mixing water to obtain the best results.

## Curing :

As with all structural concrete, good curing practices should be maintained. Water spray, wet hessian or a Classic CURE WB White spray applied curing membranes should be used.

# CLASSIC™ DURA CONGUARD

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## Typical Properties:

**Appearance:** Light pink coloured liquid

**Specific Gravity :** Typically 1.035±0.02@20 °C

**Chloride content:** Nil to BS 5075

**pH Value:** 10 to 12 @ 20 °C

## Storage:

**Classic Dura Conguard** has a minimum shelf life of 12 months provided the temperature is kept within the range of 2 °C to 50 °C.

**Classic Dura Conguard** is an oxidizing agent and should be stored away from the reducing agents and combustible materials.



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**CSIR-CECRI**

Touching Lives Through Electrochemistry

**REPORT**

**Project title** : Evaluation of corrosion protection efficiency of migrating inhibitor for reinforced concrete structures.

**Sponsorer** : Primadonn Buildtech Private Limited, Chennai

**Objective** : To evaluate the efficiency of migrating corrosion inhibitor in concrete

**Product** : Primadonn Classic Dura Conguard – Corrosion inhibiting for concrete

**1. Influence of inhibitor on properties of concrete**

Property	Value		Remarks
	Concrete without inhibitor	Concrete with inhibitor	
<b>Slump (mm)</b>	83	92	As per ASTM C1582/C1582M – 11 (2017), the slump value is > 75mm and < 200mm.
<b>Setting time (min)</b> Initial Final	330 469	365 540	As per ASTM C1582/C1582M – 11 (2017), the setting time values are within the permissible limits (allowable deviation from control, not more than 3:30 (h:min) earlier or later).
<b>Fresh density (kg/m<sup>3</sup>)</b>	2,585	2,599	-
<b>Cylinder compressive strength (MPa)</b> 3-day 7-day 28-day	5.71 8.36 15.41	4.64 6.82 12.83	As per ASTM C1582/C1582M – 11 (2017), the compressive strength of concrete with inhibitor is within the permissible limits (not less than 80% of control concrete).
<b>Flexural strength (MPa)</b> 3-day 7-day 28-day	1.47 1.28 1.67	1.21 1.30 1.87	As per ASTM C1582/C1582M – 11 (2017), the flexural strength of concrete with inhibitor is within the permissible limits (not less than 80% of control concrete).

**2. Uniformity and equivalence characteristics of inhibitor**

2.1 Properties
<b>Colour</b> - Pink
<b>Odour</b> - Pungent
<b>pH</b> - 11.89

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**REPORT**

**2.2 Functional group based on infrared analysis**

Wave No. (cm <sup>-1</sup> )	Functional groups
3660-2649	O-H and N-H stretching groups
2920-2950	Asymmetrical stretching of CH <sub>2</sub> & CH <sub>3</sub> and also to N-H vibrations
2863	Stretching of CH <sub>3</sub>
1733	C=O carboxyl stretching vibrations
1598	Vibration of (COO <sup>-</sup> ) ionic carboxyl group and N-H deformation modes in the NH <sub>2</sub> group
1476 and 1373	Stretching and bending modes of aliphatic C-H
1196	C-N stretch secondary amine
1107	C-O-C group

**2.3 Residue by oven drying method**

Percentage residue	5-6%	< 12% as recommended by ASTM C494 / C494M - 05a
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**3. Corrosion experiments**

- Visual examination of the surface condition of rebars showed that, the corroded area of the rebar embedded in concrete containing Primadonn Classic Dura Conguard inhibitor was less than that of the rebar embedded in concrete cast without inhibitor.
- Addition of Primadonn Classic Dura Conguard inhibitor showed tendency to decrease the corrosion potential values.
- The Primadonn Classic Dura Conguard inhibitor improved the corrosion behavior of the embedded steel rebars in concrete by delaying the initiation of corrosion with an efficiency of 85%.

----- End of Report -----

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