

# **Performance Evaluation of PPG Floor Lining**

Supplied by M/s Crescent Technologies Pvt. Ltd., Bhopal



By

**Regional Research Laboratory**

(COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH)

**Hoshangabad Road**

**Bhopal-462026**

# TEST REPORT

**Material supplied by:** M/s Crescent Technologies Pvt. Ltd.,  
442, Dynamic center, Zone-I, M.P. Nagar,  
Bhopal 462011  
Ph.: 0755- 270184  
Fax :0-755-559687

**Reference:** 2893/RRL

**Test Carried out by:** Regional Research Laboratory  
Hoshangabad Road  
Bhopal-462026

**Description of Material:** PPG floor lining (Poly propylene based lining material backed with glass fibre cloth) was supplied by M/s Crescent Technologies Pvt. Ltd. Bhopal, in the form of sheets of size 30cmx30cm for performance evaluation.

## TEST RESULTS

The supplied PPG floor lining material was in the form of composite sheet backed with glass fibre cloth. The sheet was fixed with suitable adhesive on concrete or low carbon steel surfaces by M/s Crescent Technologies Pvt. Ltd. The lining material was pasted on concrete/steel surface from glass cloth side whereas the polypropylene side remained untouched.

To evaluate a few properties of the product, following test were conducted and typical test results are reported hereunder:

### 1. Wear loss due to abrasive action on Polypropylene side

High stress abrasive wear test was conducted on two body SUGA Abrasion Tester Model NUS1, Japan. Wear rate was estimated from weight loss measurements.

Wear volume loss at 3N applied load and 25.6m sliding distance = 3.86 mm<sup>3</sup>

Wear volume loss at 7N applied load and 25.6m sliding distance = 8.19 mm<sup>3</sup>

- |   |                            |
|---|----------------------------|
| a) Specific wear rate   | =0.046 mm <sup>3</sup> /mN |
| b) Specific wear rate of acid treated samples<br>[Samples treated as per IS; 159(1981)] | =0.040 mm <sup>3</sup> /mN |

## 2. Bonding strength of PPG lining material with M.S. and R.C.C.

Bonding strength under shear mode was evaluated:

- a) Bonding strength with M.S. : 26.05 kg/cm<sup>2</sup>
- b) Bonding strength with R.C.C\*. : >38.65kg/cm<sup>2</sup>

\*Interface between PPG lining and RCC slab did not fail. Failure occurred in tile/concrete during test

## 3. Back Pressure (Water Leakage) Test

A test was conducted on samples prepared to estimate tolerance of lining material to withstand against seepage-water-pressure. For this purpose lining material was fixed on a commercial grade concrete tile by M/s Crescent Technologies Pvt. Ltd. A hole was made from concrete side in the tile up to the lining material through which water pressure was applied. The pressure of water was measured using a pressure gauge.

Observations:

- a) No damage to lining material was observed during the test up to an applied water pressure of 25 kg/cm<sup>2</sup>.
- b) Adhesive joint between concrete tile and lining material tolerated a pressure ranging from 10-20 kg/cm<sup>2</sup> in various samples.

## 4. Chemical resistance against HCl and NaOH

The samples were treated with acids and base separately as per IS 159(1981) and physical observations are as follows

- No crack was observed on surface
- No colour change was observed
- No weight loss was observed

## 5. Falling Dart Impact Test

The depth of indentation was measured on PPG lining sample which was pasted on a concrete tile of one inch thickness using commercially available adhesive supplied by M/s Crescent Technologies Pvt. Ltd. Two different darts weighing 500g and 1000g were dropped freely from different heights on the PPG lining material. The average thickness of PPG lining excluding glass fibre matrix was 2.0 mm.

## Performance Evaluation of PPG Floor Lining

### Observations

The indentation energy and corresponding indentation depth measured is given in Table-1

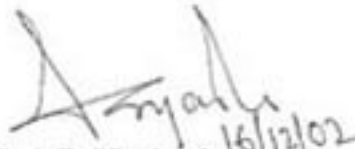
TABLE-1

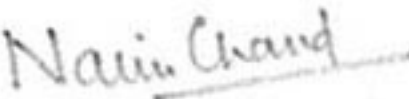
S.No.	Indentation energy (Joules)	Indentation depth (mm)
1	3.75	0.21
2	5.00	0.36
3	7.50	0.52
4	10.00	0.69
5	12.50	0.91
6	15.00	1.38
7	17.50	1.58
8	20.00	1.85

### Physical Observations of tested samples

- No crack was observed on lining material after indentation.
- Plastic flow of polymeric material was noticed causing different indentation depth.
- Failure of lining material was observed at 20 Joule.

  
(Ajay Naik)  
Tech. Officer

  
(S.A.R. Hashmi) 16/12/02  
Scientist E1

  
(Navin Chand)  
Scientist F & Head