



**GVM TEST HOUSE**  
AND RESEARCH CENTRE

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ISO 9001:2015 Certified

**TESTING | TRAINING | AUDITING**

Test Order Ref: GVM/HDPE/05156-5/04/2024

Date of Receipt: 09.04.2024

Date: 08.06.2024

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**GRASIM INDUSTRIES LTD.**

P.O. Birlagram, Nagda-456331, District Ujjain,  
Madhya Pradesh, India.

**TEST REPORT ON RESISTANCE TO OXIDATION OF HDPE MEMBRANE**

Source of Sample	: Sample Submitted by Customer
Number of samples Tested	: 01 (One only).
Customer's Reference	: PO No.- 4900003848, dt 22.03.2024
Lab Reference Number	: 2024/APR/05156-5
Condition of sample	: Satisfactory
Sample Identification #	: Birla Opus Prime HW15 (1.5 mm Sand Finish Weldable HDPE Membrane)
Period of Test	: 12.04.2024 to 08.06.2024

**INTRODUCTION:**

This report describes the Resistance to Oxidation of HDPE Membrane test carried out at the request of "GRASIM INDUSTRIES LTD" on 22<sup>th</sup> Mar. 2024 at GVM Test House And Research Centre, Navi Mumbai. Testing for Resistance to Oxidation of HDPE Membrane was conducted according to guidelines of ISO 13438:2018 Procedure A "Screening test method for determining the resistance of geotextiles and geotextile-related products to oxidation" and EN 13251:2016 (E).

**SAMPLE DESCRIPTION:**

GVM Test House And Research Centre received sample of size of 1 m x 1 m. The sample was given unique sample identification (Birla Opus Prime HS12 (1.2 mm sand finish HDPE membrane) for reference purpose.

**BRIEF SUMMARY OF THE TEST:**

1. Test specimens and control specimens were prepared in each direction in accordance with EN 12226: 2012.
2. **Conditioning for Control specimens** - All control specimens were stored in water at 80°C for 6 hrs. and then 6 h in an oven at  $(100 \pm 1) ^\circ\text{C}$ . After exposure, specimens were kept in a dark room at room temperature.
3. **Conditioning for test specimens** - All test specimens were stored in water at 80°C for 28 days, the water was changed every seven days and moved once per day. The specimens were then exposed to an elevated temperature of 100°C in air for 28 days in a regulated laboratory oven.
4. The tensile strength is then carried out on test and control specimens. The mean results obtained are shown in the table.

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**TEST RESULTS:**

S. N.	Test Conducted	Unit	Test Results	Test Method
<b>A</b>	<b>Control Specimens</b>			
1	Tensile Strength- Longitudinal	N/mm <sup>2</sup>	29.22	ASTM D 412: 2016
2	Tensile Strength- Transverse	N/mm <sup>2</sup>	28.44	ASTM D 412: 2016
3	Elongation- Longitudinal	%	869	ASTM D 412: 2016
4	Elongation- Transverse	%	902	ASTM D 412: 2016
<b>B</b>	<b>Test Specimens</b>			
1	Tensile Strength - Longitudinal	N/mm <sup>2</sup>	23.06	ASTM D 412: 2016
2	Tensile Strength- Transverse	N/mm <sup>2</sup>	22.88	ASTM D 412: 2016
3	Elongation - Longitudinal	%	711	ASTM D 412: 2016
4	Elongation- Transverse	%	746	ASTM D 412: 2016
<b>C</b>	<b>Retained Tensile Strength &amp; % Elongation</b>			
1	Retained Tensile Strength- Longitudinal	%	79	---
2	Retained Elongation - Longitudinal	%	80	---
3	Retained Tensile Strength- Transverse	%	82	---
4	Retained Elongation - Longitudinal	%	83	---

# As furnished by the customer.

**Interpretation of test results:** The test results obtained are confirmed to the requirements of EN 13251:2016 for 25 Years of service life. (Retained strength more than 50 percent of control sample)

- 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 GVM TEST HOUSE AND RESEARCH CENTRE**



**DINESH BURDE**  
*[Signature]*  
**Authorised Signatory**



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