



**GVM TEST HOUSE**  
AND RESEARCH CENTRE

23-24, Yashodeep Heights,  
Plot No. 14/15, Sector 29C,  
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Phone: +91 93244 69890  
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TC-9061

**TESTING | TRAINING | AUDITING**

Test Order Ref: GVM/HDPE/05189-2-1/04/2024  
ULR: TC906124000000855F

Date: 24.04.2024

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**GRASIM INDUSTRIES LTD.**

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

**TEST REPORT ON HDPE MEMBRANE**

Source of Sample : Sample Submitted by Customer  
Number of samples Tested : 01 (One only).  
Customer's Reference : PO No.- 4900004258, dt 09.04.2024  
Lab Reference Number : 2024/APR/05189-2-1  
Condition of sample : Satisfactory  
Date of Receipt : 09.04.2024  
Sample Identification # : Birla Opus Prime HS12 (1.2 mm sand finish HDPE membrane)  
Period of Test : 10.04.2024 to 24.04.2024

**TEST RESULTS:**

S. N.	Test Conducted	Unit	Test Results	Test Method
1	Thickness (Composite)	mm	1.26	ASTM D 3767:2003
2	Tensile Strength - Longitudinal	N/mm <sup>2</sup>	27.44	ASTM D 412: 2016
3	Tensile Strength - Transverse	N/mm <sup>2</sup>	26.32	ASTM D 412: 2016
4	Elongation - Longitudinal	%	783	ASTM D 412: 2016
5	Elongation - Transverse	%	899	ASTM D 412: 2016
6	Puncture Resistance	N	985	ASTM E 154: 2008
7	Resistance to Hydrostatic Head up to 7 Bar (71.4 meter)	Visual	No Leakage	ASTM D 5385: 2020
8	Dimension Stability @ 80° C For 24 Hrs.	%	0.12	ASTM D 1204: 2014
9	Peel Adhesion with Concrete	N/m	1978	ASTM D 903: 1998
10	Lap Peel Adhesion	N/m	1459	ASTM D 1876: 2008
11	Low Temperature Flexibility (-25 °C)	Visual	No Crack	ASTM D 1970: 2021
12	Water Vapor Transmission Rate	g/m <sup>2</sup> .day	0.02	ASTM E 96: 2022

# 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 GVM TEST HOUSE AND RESEARCH CENTRE



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



Regd. Office:

402, Yogesh Apartment CHS, Plot No. 26, Sector 8A, Airoli, Navi Mumbai - 400 708, INDIA.  
GSTIN: 27BPBPB4090Q1ZM

ISO 9001:2015 Certified





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Test Order Ref: GVM/HDPE/05189-2-2/04/2024  
ULR: TC906124000001110F

Date: 27.05.2024  
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**GRASIM INDUSTRIES LTD.**

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

**TEST REPORT ON HDPE MEMBRANE**

Source of Sample : Sample Submitted by Customer  
Number of samples Tested : 01 (One only).  
Customer's Reference : PO No.- 4900004258, dt 09.04.2024  
Lab Reference Number : 2024/APR/05189-2-2  
Condition of sample : Satisfactory  
Date of Receipt : 09.04.2024  
Sample Identification # : Birla Opus Prime HS12 (1.2 mm sand finish HDPE membrane)  
Period of Test : 10.04.2024 to 27.05.2024

**TEST RESULTS:**

S. N.	Test Conducted	Unit	Test Results	Test Method
A	Test Results After conditioning with 10% Sodium Chloride (NaCl) solution for 28 days at 23± 2 °C as per DIN 16726. Further conditioned at 23± 2 °C and 50±6% Relative Humidity for 7 days #			
1	Thickness (Composite)	mm	1.25	ASTM D 3767: 2003
2	Tensile Strength - Longitudinal	N/mm <sup>2</sup>	26.62	ASTM D 412: 2016
3	Tensile Strength - Transverse	N/mm <sup>2</sup>	25.81	ASTM D 412: 2016
4	Elongation - Longitudinal	%	779	ASTM D 412: 2016
5	Elongation - Transverse	%	884	ASTM D 412: 2016
6	Puncture Resistance	N	941	ASTM E 154: 2008
7	Resistance to Hydrostatic Head up to 7 Bar (71.4 meter)	Visual	No Leakage	ASTM D 5385: 2020
8	Peel Adhesion with Concrete	N/m	1859	ASTM D 903: 1998
B	Test Results After conditioning 45 Days UV Resistance as per ASTM G 154 #			
1	Tensile Strength - Longitudinal	N/mm <sup>2</sup>	27.04	ASTM D 412: 2016
2	Tensile Strength - Transverse	N/mm <sup>2</sup>	25.98	ASTM D 412: 2016
3	Elongation - Longitudinal	%	781	ASTM D 412: 2016
4	Elongation - Transverse	%	889	ASTM D 412: 2016

# As furnished by the customer.

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