



GVM TEST HOUSE
AND RESEARCH CENTRE

23-24, Yashodeep Heights,
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TESTING | TRAINING | AUDITING

Test Order Ref: GVM/HDPE/05189-3-1/04/2024
ULR: TC906124000000856F

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/05189-3-1
Condition of sample : Satisfactory
Date of Receipt : 09.04.2024
Sample Identification # : Birla Opus Prime HW15 (1.5 mm Sand Finish Weldable 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	1.56	ASTM D 3767:2003
2	Tensile Strength - Longitudinal	N/mm ²	29.86	ASTM D 412: 2016
3	Tensile Strength - Transverse	N/mm ²	28.63	ASTM D 412: 2016
4	Elongation - Longitudinal	%	874	ASTM D 412: 2016
5	Elongation - Transverse	%	917	ASTM D 412: 2016
6	Puncture Resistance	N	1142	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.	%	0.11	ASTM D 1204: 2014
9	Peel Adhesion with Concrete	N/m	2016	ASTM D 903: 1998
10	Lap Peel Adhesion	N/m	15866	ASTM D 1876: 2008
11	Shear Resistance of Joints	N/ 50mm	804 (Failure in the material out of Joint)	EN 12317-2: 2010
12	Low Temperature Flexibility (-25 °C)	Visual	No Crack	ASTM D 1970: 2021
13	Water Vapor Transmission Rate	g/m ² .day	0.01	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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TC-9061

TESTING | TRAINING | AUDITING

Test Order Ref: GVM/HDPE/05189-3-2/04/2024
ULR: TC906124000001111F

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/05189-3-2
Condition of sample : Satisfactory
Date of Receipt : 09.04.2024
Sample Identification # : Birla Opus Prime HW15 (1.5 mm Sand Finish Weldable 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	1.56	ASTM D 3767:2003
2	Tensile Strength - Longitudinal	N/mm ²	28.06	ASTM D 412: 2016
3	Tensile Strength - Transverse	N/mm ²	26.91	ASTM D 412: 2016
4	Elongation - Longitudinal	%	856	ASTM D 412: 2016
5	Elongation - Transverse	%	894	ASTM D 412: 2016
6	Puncture Resistance	N	1119	ASTM E 154: 2008
7	Resistance to Hydrostatic Head up to 7 Bar (71.4 meter)	Visual	No Leakage	ASTM D 5385:2020
9	Peel Adhesion with Concrete	N/m	1895	ASTM D 903: 1998
B	Test Results After conditioning 45 Days UV Resistance as per ASTM G 154 #			
1	Tensile Strength - Longitudinal	N/mm ²	28.97	ASTM D 412: 2016
2	Tensile Strength - Transverse	N/mm ²	27.94	ASTM D 412: 2016
3	Elongation - Longitudinal	%	866	ASTM D 412: 2016
4	Elongation - Transverse	%	906	ASTM D 412: 2016

As furnished by the customer.

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