

TEST REPORT

40, Yeongudanji-ro, Ochang-eup, Cheongwon-gu, Cheongju-si,
Chungcheongbuk-do, 28116 Rep. of KOREA

TEL 82-43-211-6144 FAX 82-43-211-6148

Report No : TAC-000979

Receipt Date : Feb.26.2016

Client : HAN MYEUNG HO

Test Completion Date : Mar.18.2016

Hanwha L&C

37 BUKANGKUMHO-RO BUKANG-MYEON SEJONG CITY KOREA

Sample : HANEX(D)

TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Density(23 °C)	g/cm ³	-	1.75	ASTM D792-13(Method A)
Specific Gravity((23/23) °C)	-	-	1.76	ASTM D792-13(Method A)
Rockwell Hardness(HRM)	-	-	89	ASTM D785-08(2015) (Procedure A)
Tensile Strength	MPa	-	45.5	ASTM D638-14(*)
Tensile Modulus of Elasticity	GPa	-	13.4	ASTM D638-14(*)
Flexural Strength	MPa	-	65.4	ASTM D790-15e2(**)
Flexural Modulus of Elasticity	GPa	-	10.7	ASTM D790-15e2(**)
Izod Impact Strength	J/m	-	20	ASTM D256-10e1(Method A)
Water Absorption(24 h Immersion)	%	-	0.10	ASTM D570-98(2010)e1
Deflection Temperature Under Load	°C	-	89	By The Client(***)
Thermal Expansion	1/°C	-	5.8×10^{-5}	KS M 3015 : 2003
Heat Resistance	-	-	No Defects	JIS K 6902 : 2007
Heat Water Resistance	-	-	No Defects	JIS K 6902 : 2007

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Technical Manager
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Mar.18.2016

Korea Testing & Research Institute

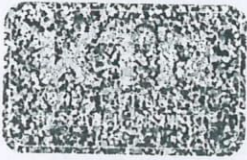
President

Choi Hyeonk'



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TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
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* Specimen: TYPE I, Speed of Testing: 5 mm/min(Modulus: 1 mm/min)

** Speed of Testing: 5.0 mm/min , Support Span: 190 mm

*** Apply ASTM D648(Method B), Flexural Stress : 1.82 MPa

* USAGE : QUALITY CONTROL

- NOTE : 1. The test results on this test report are only limited to the samples and sample names provided by the customer and KTR does not guarantee the quality of all products of the customer, and you can confirm the authenticity of the test report online (www.ktr.or.kr) or by using the QR code.
2. This test report shall not be used for public relation, advertisement, lawsuit and any other purposes outside the scope of its defined usage.
3. This test report includes the test result performed in accordance with the test method suggested by the client.
4. Only original copy (including certified copy) of the test report is valid - electronic copy (hard and/or soft) is for your reference only.

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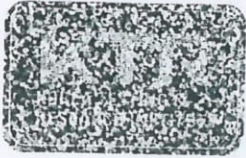
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HANWHA L&C CORPORATION

Won Hee Lee

W. H. LEE / Manager

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Report No : TAC-000980

Receipt Date : Feb.26.2016

Client : HAN MYEUNG.HO

Test Completion Date : Mar.18.2016

Hanwha L&C

37 BUKANGKUMHO-RO BUKANG-MYEON SEJONG CITY KOREA

Sample : HANEX(S)

TEST RESULTS

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Density(23 °C)	g/cm ³	-	1.80	ASTM D792-13(Method A)
Specific Gravity((23/23) °C)	-	-	1.81	ASTM D792-13(Method A)
Rockwell Hardness(HRM)	-	-	90	ASTM D785-08(2015) (Procedure A)
Tensile Strength	MPa	-	44.8	ASTM D638-14(*)
Tensile Modulus of Elasticity	GPa	-	14.4	ASTM D638-14(*)
Flexural Strength	MPa	-	70.6	ASTM D790-15e2(**)
Flexural Modulus of Elasticity	GPa	-	11.8	ASTM D790-15e2(**)
Izod Impact Strength	J/m	-	21	ASTM D256-10e1(Method A)
Water Absorption(24 h Immersion)	%	-	0.13	ASTM D570-98(2010)e1
Deflection Temperature Under Load	°C	-	87	By The Client(***)
Thermal Expansion	1/°C	-	5.9×10^{-5}	KS M 3015 : 2003
Heat Resistance	-	-	No Defects	JIS K 6902 : 2007
Heat Water Resistance	-	-	No Defects	JIS K 6902 : 2007

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