VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETAS
TERMOIZOLIACIJOS MOKSLO INSTITUTAS

(VILNIUS GEDIMINAS TECHNICAL UNIVERSITY SCIENTIFIC INSTITUTE OF THERMAL INSULATION)

Notified body number: 1688

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LIETUVOS NACIONALINIS AKREDITACIJOS BIURAS
BANDYMAI
ISO/IEC 17025 Nr. LA. 01.004

TEST REPORT
No 1688-CPR-1552

16 October 2015

The results are valid for the tested testing object only

1. CUSTOMER: OJSC "Glassworks "Neman" Korzyuk St. 8, 231306 Berezovka, Lida district, The Grodno region, Republic of Belarus. No of decision for certification 7451-ec, 17 of August, 2015.
2. MANUFACTURER: OJSC "Glassworks "Neman" Korzyuk St. 8, 231306 Berezovka, Lida district, The Grodno region, Republic of Belarus.
3. PRODUCT: Light-weight glass wool product: **M11**. Produced according to *EN 13162:2012+A1:2015. Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification.*
4. RECEIVING DATE: 7th of October, 2015.
5. TESTING DATA: From 7th of October, 2015 to 14th of October, 2015.
6. TEST LOCATION: Laboratory.
7. SAMPLES SELECTED BY: The samples were selected by VĮ Statybos produkcijos sertifikavimo centras (SPSC), notified body number 1397, Linkmenu str. 28, LT-08217 Vilnius, Lithuania. It was selected the samples representing 4 production dates. Information about sampling was given in Sampling Report: No 20/RSM dated 5th of October, 2015. Samples were wrapped into polyethylene.
8. TESTS WERE CARRIED OUT IN ACCORDANCE WITH:
   EN 822:2013. Thermal insulating products for building applications - Determination of length and width.
   EN 823:2013. Thermal insulating products for building applications - Determination of thickness.
   EN 1602:2013. Thermal insulating products for building applications – Determination of apparent density.
   EN 1609:2013. Thermal insulating products for building applications - Determination of short term water absorption by partial immersion.
   EN 12085:2013. Thermal insulating products for building applications - Determination of linear dimensions of test specimens.
   EN 12667:2001 Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance.
   EN 12939:2000. Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Thick products of high and medium thermal resistance.
   EN 13820:2003. Thermal insulating materials for building applications. Determination of organic content.
9. OTHER INFORMATION: Test results are presented in Annexes. The rest samples are keeping for 15 days.
10. ANNEXES: Annex A – 1 page, B – 1 page, C – 1 page and D – 1 page.

Head of Laboratory of Thermal Insulating Materials **Dr. S. Vėjelis**

Technically responsible for tests, senior researcher of Laboratory of Thermal Insulating Materials **Dr. S. Vaitkus**

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Annex A
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1 (1)

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Table A.1 Test results of glass wool rolls **M11**[*)]

Roll No.	Production date	Roll length, mm	Roll width, mm	Nominal thickness d_N, mm	Thickness measured under a load of 50 Pa, mm		Density, kg/m^3	
					Number of tested products	Mean value and all individual values	At measured thickness	At nominal thickness
1	01.10.2015	8910	**1209** (1220; 1212; 1205; 1214; 1210; 1210; 1200; 1200)	50	1	**53** (58;53; 51; 59; 42; 63; 61; 61; 58; 57; 43; 59; 51; 52; 50; 56; 53; 56; 52; 47; 52; 55; 38; 55)	11.7	12.4
2	03.10.2015	12070	**1202** (1200; 1200; 1200; 1200; 1205; 1200; 1200; 1205; 1205; 1205)	75	1	**72** (62; 72; 79; 81; 82; 83; 88; 69; 67; 64; 63; 68; 70; 75; 68; 68; 60; 71; 75; 81; 75; 79; 82; 75; 66; 61; 63; 86; 67; 67; 65; 66)	11.1	10.7
3	24.09.2015	8900	**1211** (1217; 1205; 1210; 1210; 1220; 1200; 1210; 1215)	50	1	**52** (56; 51; 34; 60; 52; 59; 48; 52; 60; 60; 43; 51; 53; 54; 48; 55; 60; 54; 47; 56; 53; 55; 42; 53)	12.7	12.2
4	30.09.2015	11965	**1206** (1200; 1195; 1205; 1200; 1210; 1205; 1205; 1210; 1210; 1215)	75	1	**78** (87; 75; 76; 80; 85; 77; 78; 77; 75; 74; 82; 77; 79; 76; 75; 82; 77; 73; 78; 79; 69; 74; 81; 76; 73; 76; 76; 77; 82; 82; 77; 78)	10.6	11.0
Mean value							**11.5**	**11.6**

[*)] Before the test specimens were conditioned for ≥ 6 hours at (23±5) °C temperature.

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Annex B
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Table B.1 Test results of glass wool **M11** organic content*)

Production date	Nominal thickness, d_N, mm	Specimen No.	Organic content, % by mass
01.10.2015	50	1	6.7
		2	4.8
		3	4.7
		4	4.7
		5	4.6
		Mean value	**5.1**
03.10.2015	75	1	4.8
		2	4.9
		3	4.7
		4	5.6
		5	6.0
		Mean value	**5.2**
24.09.2015	50	1	4.4
		2	6.4
		3	5.4
		4	5.7
		5	5.3
		Mean value	**5.4**
30.09.2015	75	1	4.3
		2	4.5
		3	4.6
		4	3.7
		5	5.1
		Mean value	**4.4**

*) Specimens were dried in ventilated oven for 2 hours at (105±5) °C temperature and cooled off to constant mass in desiccator at (23±5)°C temperature. During the test, the pot with specimen was placed in an oven for 2 hours at temperature of (500±20) °C until the constant mass was reached. Exposure time – 2,5 hours. Tests were carried out 12th of October, 2015.

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Annex C
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Table C.1 Test results of glass wool **M11**

Specimen No	Production date	Thickness of specimen, mm	Density of specimen, kg/m^3	Thermal conductivity at 10°C, W/(m·K)
1*	01.10.2015	50.0	15.6	0.0375
2*	03.10.2015	75.0	13.2	0.0376
3*	24.09.2015	50.0	17.9	0.0364
4*	30.09.2015	71.0	13.4	0.0376

*) Tests of thermal conductivity were carried out by heat flow meter apparatus FOX 304 with a single-specimen symmetrical configuration and with the linear gradient guard for sample edges. The size of specimens was of (300x300) mm. The temperature difference through the specimen was 20°C and the mean temperature during the test was 10°C. Apparatus FOX 304 was calibrated using reference material IRMM-440, No. 21. Sertified reference of expanded polystyrene, No. 12120890 is related to reference IRMM-440, No. 21. Apparatus FOX 304 was calibrated using reference of expanded polystyrene, No. 12120890 on 28th of September, 2015. FOX 304 is additionally calibrated according to IRMM-440, No. 21 parameters, which are set in an internal memory of the apparatus, before each measurement of thermal conductivity. Test objects were conditioned to constant mass at (23±5) °C temperature and (50±5) % relative air humidity. Ambient temperature of environment surrounding the apparatus during the test is 23.0 °C. The main surfaces of specimens were grinded using grinding wheel before testing in accordance with EN 12667, 6.3.2. Test was carried out by engineer Giedrius Balčiūnas.

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Annex D
TEST REPORT
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Table D.1 Test results of glass wool **M11** short term water absorption by partial immersion*)

Production date	Nominal thickness, d_N, mm	Specimen No.	Density, kg/m^3	Short term water absorption by partial immersion, kg/m^2
01.10.2015	50	1	15.0	0.91
		2	16.2	0.88
		3	15.4	0.95
		4	14.3	0.90
		Mean value	**15.2**	**0.91**
03.10.2015	75	1	16.6	0.98
		2	16.0	0.93
		3	15.4	0.92
		4	16.0	0.94
		Mean value	**16.0**	**0.94**
24.09.2015	50	1	15.5	0.45
		2	17.3	0.63
		3	16.8	0.15
		4	13.9	0.86
		Mean value	**15.9**	**0.52**
30.09.2015	75	1	15.2	0.92
		2	15.1	0.55
		3	16.3	0.52
		4	15.0	0.30
		Mean value	**15.4**	**0.57**

*) Before the test specimens were conditioned for ≥6 hours at (23±5) °C temperature. Tests were carried out in accordance with method A with specimens having dimensions of (200x200) mm from 9th of October, 2015 to 10th of October, 2015.