TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
BUILDING TESTING AND RESEARCH INSTITUTE, Slovak Republic
Studená 3, 821 04 Bratislava
Testing laboratory

Laboratory branch in Prešov, Budovateľská 53, 080 01 Prešov, tel.: +421 51 7732 631, e-mail: lab.po@tsus.sk

TEST REPORT No. 80-23-1137

JOB

No.:	80230179
Client:	ALPINA GRATE s. r. o. Hlavná 50 080 01 Prešov Slovakia

OBJECT OF TESTING

Product:	Glass fibre reinforced polymer (GFRP) bars, diameter 10 mm
Manufacturer:	identical with the client
Manufacturing plant:	ALPINA GRATE s. r. o., Stročín 122, 089 01 Stročín, Slovakia
Technical specifications:	for the purpose of issuing of SK Technical Assessment

PRODUCT SAMPLE

Description of sample:	30 pcs of glass fibre reinforced polymer bars, diameter 10 mm
Designation of sample by client:	ALPINA GRATE s. r. o composite reinforcement in bars, diameter 10 mm
Production date:	not listed
Place and date of sampling:	manufacturing plant, date not listed
Sampler:	client
Place and date of delivery:	testing laboratory Prešov, 08.06.2023
Designation of sample by lab:	599/2023

TESTS

Cross-section properties

Test procedure:	EN ISO 15630-1: 2019 Steel for the reinforcement and prestressing of concrete – Test methods – Part 1: Reinforcing bars, rods and wire (ISO 15630-1: 2019) ISO 10406-1: 2015 Fibre-reinforced polymer (FRP) reinforcement of concrete – Test Methods – Part 1: FRP bars and grids GOST 31938: 2012 Fibre-reinforced polymer bar for concrete reinforcement
Description of test specimens:	5 pcs of glass fibre reinforced polymer, diameter 10 mm
Test specimens prepared by:	Pavel Repka
Test conditions:	20,6 °C
Deviation from the standard:	none
Date of test:	04.12.2023
Test personnel:	Pavel Repka

Tensile properties – tensile strength, Young´s modulus Percentage total extension at maximum force

Test procedure:	EN ISO 15630-1: 2019 Steel for the reinforcement and prestressing of concrete – Test methods – Part 1: Reinforcing bars, rods and wire (ISO 15630-1: 2019) ISO 10406-1: 2015 Fibre-reinforced polymer (FRP) reinforcement of concrete – Test Methods – Part 1: FRP bars and grids GOST 31938: 2012 Fibre-reinforced polymer bar for concrete reinforcement
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Test conditions:	20,6 °C
Deviation from the standard:	none
Date of test:	04.12.2023
Test personnel:	Pavel Repka

TEST RESULTS:

Table No. 1 – cross-section properties of glass fibre reinforced polymer bars, diameter 10 mm

Test specimen No.	Inner diameter (average)	Outer diameter (average)	Nominal diameter (average)	Winding width (average)	Number of windings per meter	Mass per meter
	D_I	D_E	D_N	b	t	m
	(mm)	(mm)	(mm)	(mm)	(pcs/m)	(kg/m)
1	8,69	10,18	9,44	4,31	66	0,128
2	8,46	9,89	9,18	3,82	66	0,124
3	8,46	10,04	9,25	3,39	65	0,124
4	8,67	10,02	9,35	3,85	65	0,129
5	8,48	10,08	9,28	3,43	67	0,125

Table No. 2 – tensile properties of glass fibre reinforced polymer bars, diameter 10 mm

Test specimen No.	Measured diameter	Calculated cross-section area	Tensile strength		Percentage total extension at maximum force (F_m)	Young´s modulus of elasticity
	d	A	F_m	R_m	A_{gt}	E_f
	(mm)	(mm^2)	(kN)	(MPa)	(%)	(GPa)
6	8,69	59,34	72,0	1214,0	2,204	52,151
7	8,75	60,17	69,6	1156,7	2,053	50,532
8	8,46	56,21	66,7	1187,5	2,196	53,559
9	8,67	59,03	65,6	1112,8	2,232	52,182
10	8,48	56,47	71,0	1258,1	2,279	50,993

Date of report: 19.12.2023
Prepared by: Ing. Roman Oravec

Authorized by:

Ing. Martin Šutlák
Head of Laboratory Branch

Technický a skúšobný ústav stavebný, n.o., Bratislava
skúšobné laboratórium
TSUS
pracovisko Prešov

Notes:

- If the sampling of the product was not performed by a test laboratory worker, the data on the manufacturer, production and sampling are given according to information provided to customers. If the information provided to the customer may affect the validity of the results, the test laboratory disclaims any responsibility for the validity of the results.
- The tests were performed in accordance with the above test procedures.
- The stated expanded uncertainty U is based on the standard uncertainty multiplied by the coverage factor k = 2, which in case of the normal distribution provides a level of confidence of approximately 95%.
- The results obtained only apply to the product sample.
- The test report may be reproduced in its entirety without the written consent of the test laboratory.

---------- **End of test report** ----------