



TECHNICKÝ A SKÚŠOBNÝ ÚSTAV STAVEBNÝ, n. o.
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Testing laboratory

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TEST REPORT No. 80-23-1136

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 8 mm
Manufacturer: identical with the client
Manufacturing plant: ALPINA GRATE s. r. o., Stročin 122, 089 01 Stročin, 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 8 mm
Designation of sample by client: ALPINA GRATE s. r. o. composite reinforcement in bars, diameter 8 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: 598/2023

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 8 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

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TEST RESULTS:

Table No. 1 – cross-section properties of glass fibre reinforced polymer bars, diameter 8 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	6,91	8,32	7,62	3,50	66	0,085
2	6,84	8,83	7,84	3,77	64	0,084
3	7,01	8,39	7,70	3,61	66	0,085
4	6,87	9,10	7,99	3,70	64	0,085
5	6,89	8,43	7,66	3,47	64	0,086

Table No. 2 – tensile properties of glass fibre reinforced polymer bars, diameter 8 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_t
	(mm)	(mm ²)	(kN)	(MPa)	(%)	(GPa)
6	6,78	36,07	49,7	1378,6	2,298	52,723
7	6,86	37,03	49,6	1339,7	2,333	53,996
8	7,01	38,59	51,2	1326,7	2,525	52,150
9	6,87	37,06	48,7	1314,1	2,404	51,723
10	6,89	37,28	49,3	1322,4	2,279	52,648


Date of report:

19.12.2023

Prepared by:

Ing. Roman Oravec

Authorized by:


Ing. Martin Šutlák
Head of Laboratory Branch



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** -----