



RIGA TECHNICAL UNIVERSITY
INSTITUTE OF MATERIALS AND STRUCTURES

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Riga, LV-1048, Latvia.

**Testing of glass fibre reinforcement bar samples
in accordance with ISO 10406-1-2015 standard
Report No. 1/2023**

Customer: Composite PRO, SIA (LLC)
Address: 23 Krūkļu Street, Vīķuļi, Babīte Parish, Mārupe Municipality, LV-2107, Latvia.

Riga 2023

RTU
INSTITUTE OF MATERIALS AND STRUCTURES

Test Report No. 1/2023

Customer: Composite PRO, SIA (LLC)
Address: 23 Krūkļu Street, Vīķuļi, Babīte Parish, Mārupe Municipality,
LV-2107, Latvia

Object to be tested: Testing of glass fibre reinforcement bar samples in accordance with
ISO 10406-1 2015 standard

Testing objective: Determination of tensile strength

Samples received: 2–9 February 2023

Testing started / 3 February 2023
completed: 10 February 2023

Place of testing Institute of Materials and Structures of RTU

Object to be tested

Testing was carried out on six 8 mm diameter glass fibre reinforcement bar samples in accordance with ISO 10406-1-2015 standard determining material strengths. The experimental testing resulted in the following characteristics: tensile strength and modulus of elasticity of the glass fibre fabric according to ISO 10406-1-2015 standard.

Testing procedure and results

The glass fibre reinforcement bar samples were tested using a calibrated Zwick testing machine, Model Z600. Machine specifications:

ZWICK Static Test System Z600 (Fig. 1)

- Total displacement: 1,000 mm;
- Maximum load: 600 kN;
- Computerised data processing;
- Applicable to tensile, compressive and bending tests.



Fig. 1. ZWICK Z600 static testing system.

Environmental conditions

T = 21°C,

Air humidity = 51%

Testing speed: after deformation = 1% / min

Testing includes 5 pages.

Reports

Testing results are representative of the given product sample only.
Partial reproduction of the test report in part is not allowed.

Testing was carried out by A. Korjakins,

Testing was carried out on material supplied by the customer, without any preparation and modifications. Samples were cut from the fabric and prepared for testing in the laboratory of the Institute of Materials and Structures.

1. Testing results

Designations:

- E – elastic modulus, GPa
- f_u – tensile strength, MPa
- F_u – maximum effort, kN
- ε_u – maximum %
- L_0 – length of deformation measurer, mm
- l_0 – sample length, mm
- D – diameter of the reinforcement bar, mm
- A – cross-sectional area, mm²

Testing was carried out on six samples of 1 reinforcement bar diameter in accordance with ISO 10406-1 standard determining the strength and modulus of elasticity of the material in tension. The sample was made by the Customer.

The tensile testing results for 8 mm diameter specimens are shown in Figure 2 and Table 1.

Series graph:

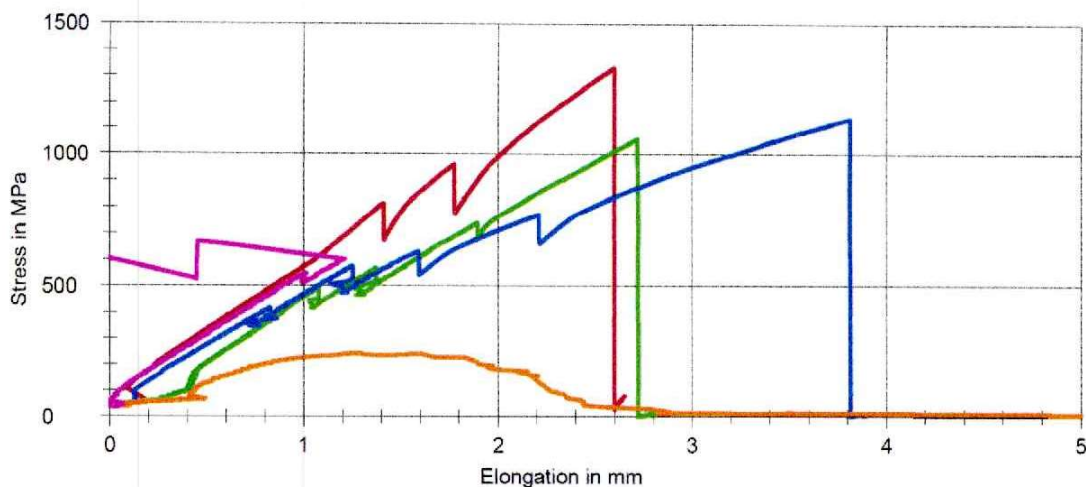


Figure 2. Tensile testing results for 8 mm diameter samples.

Table 1. Tensile testing results for 8 mm diameter samples.

	E	f_u	F_u	ε_u	L₀	l₀	D	A
No	GPa	MPa	kN	%	mm	mm	mm	mm ²
1_1	48	1,334	62.13	2.80	100	400	8.35	54.8
1_2	50	1,058	46.37	2.63	100	400	8.47	56.3
1_3	44	1,137	52.82	3.94	100	400	8.43	55.8
1_4	31	244	10.82	1.18	100	400	8.38	55.2
1_5	46	1,150	51.09	2.71	100	400	8.40	55.4
1_6	52	1,282	71.05	2.11	100	400	8.37	55.0

Considering the results of the 1_4 dropouts, results of the 5 bar tensile tests were processed.

2. Conclusions

Experimental testing resulted in tensile strengths of glass fibre strands in accordance with ISO 10406-1-2015.

The summarised testing results for 8 mm diameter bars are shown in Table 2

Table 2.

Diameter 8 mm	E	f_u	F_u	ε_u	L₀	D	A
n = 5	GPa	MPa	kN	%	mm	mm	mm ²
x	48	1,192	56.69	2.83	100	8.4	55.47
Standard deviation	3.16	112.93	9.86	0.67	0	0.05	0.63

Signature:

Aleksandrs Korjajkins

