

TESTING CENTER OF CABLE PRODUCTS

Autogennaya str. 7, Kharkov, 61099, Ukraine,
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Accredited by:
National Accreditation Agency of Ukraine - A national accreditation body of Ukraine
Certificate of Accreditation № 20353 dated January 16, 2024; Valid until January 15, 2029

TEST REPORT

Report reference number 19
Tested by Andrew Konoplev, Alina Shurupova
Approved by Nikolay Zykov
Date of issue 06-Feb-24
Testing laboratory Testing center of cable products,
Address Autogennaya str. 7, Kharkov, 61099, Ukraine,
Phone: +38 057 754 52 75, E-mail: lab@yuzhcable.com.ua
Manufacturer YUZH CABLE WORKS, PJSC
Address Autogennaya str. 7, Kharkov, 61099, Ukraine
Standard IEC 60502-1:2004 Power cables with extruded insulation and their accessories for rated voltages from 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) - Part 1: Cables for rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV)
Test procedure Tests
Cable type CABLU ARMAT 0,6/1 kV 4×120 Al
Trade mark YUZH CABLE
Rating(s) U_0/U 0,6/1
Dates of receipt of test item 22-Jan-24
Dates of performance of tests From 23-Jan-24 to 05-Feb-24
Summary of test results PASS

Ref No.	Tests	Prescribed	Observed				Verdict
1	Electrical tests		BU	BN	BK	GY	
1.1	Resistance of conductors (Ω/km)	Max. 0,253	0,248	0,247	0,247	0,248	Pass
1.2	Volume resistivity of insulation at $(90\pm 2)^\circ\text{C}$ ($\Omega\cdot\text{cm}$)	Min. 10^{12}	5,85	5,88	4,91	4,93	Pass
	Insulation resistance constant K_i at $(90\pm 2)^\circ\text{C}$ ($\text{M}\Omega\cdot\text{km}$)	Min. 3,67	7,82	6,90	7,82	6,19	Pass
1.3	Voltage test 3,5 kV/5 min	No breakdown of the insulation	No breakdown of the insulation				Pass
2	Non-electrical tests						
2.1	Measurement of thickness of insulation - nominal value (mm)	1,2	1,24	1,22	1,22	1,23	Pass
2.2	Measurement of thickness of extruded inner covering - nominal value (mm)	1,3	1,42				Pass
2.3	Measurement of thickness of the armour galvanized steel tapes - value (mm)	0,5	0,5				Pass
2.4	Measurement of thickness of sheath - nominal value (mm)	2,5	2,55				Pass
2.5	Outer diameter of cable (mm)		44				

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Ref No.	Tests	Prescribed	Observed				Verdict
2.6	Mechanical properties of insulation						
	<i>Without ageing:</i>						
	Tensile strength (N/mm ²)	Min. 12,5	20,7	21,0	20,5	21,2	Pass
	Elongation-at-break (%)	Min. 200	385	395	410	400	Pass
	<i>After ageing in air oven:</i>						
	Duration (h) / Temperature (°C)	168 / (135±3)					
	Tensile strength variation (%)	Max. ±25	-3,0	-3,3	-4,0	-4,3	Pass
	Elongation-at-break variation (%)	Max. ±25	-4,8	-4,7	-5,5	-5,4	Pass
	<i>Hot set test</i>						
	Time under load (min) / Temperature (°C)	15 / (200±3)					
mechanical stress (N/cm ²)	20						
Elongation under load (%)	Max. 175	75	75	75	80	Pass	
Permanent elongation after cooling (%)	Max. 15	0	0	0	0	Pass	
<i>Water absorption</i>							
Duration (h) / Temperature (°C)	336 / (85±2)						
Increase of mass (mg/cm ²)	Max. 1,0	0,17	0,17	0,18	0,18	Pass	
<i>Shrinkage test</i>							
Duration (h) / Temperature (°C)	1 / (130±3)						
Shrinkage (%)	Max. 4,0	1,6	1,7	1,5	1,4	Pass	
2.7	Mechanical properties of sheath						
	<i>Without ageing:</i>						
	Tensile strength (N/mm ²)	Min. 12,5		21,7			Pass
	Elongation-at-break (%)	Min. 300		620			Pass
	<i>After ageing in air oven:</i>						
	Duration (h) / Temperature (°C)	240 / (110±2)					
	Elongation-at-break (%)	Min. 300		595			Pass
	<i>Shrinkage test</i>						
Duration (h) / Temperature (°C)	5 / (80±2)						
Heating, cycles	5						
Shrinkage (%)	Max. 3,0		1,3			Pass	
<i>Pressure test at high temperature</i>							
Duration (h) / Temperature (°C)	6 / (110±2)						
Median of the depth of indentation (%)	Max. 50		18			Pass	

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Ref No.	Tests	Prescribed	Observed				Verdict
2.8	Additional ageing test on pieces of completed cables Duration (h) / Temperature (°C)	168 / (100±2)					
	<i>mechanical properties of insulation:</i> Tensile strength variation (%)	Max. ±25	-5,8	-5,7	-4,6	-6,4	Pass
	Elongation-at-break variation (%)	Max. ±25	-6,7	-4,7	-6,9	-5,0	Pass
	<i>mechanical properties of sheath:</i> Elongation-at-break (%)	Min. 300	575				Pass

Nikolay Zykov,
 Head of TCCP

Andrew Konoplev,
 Head of the Laboratory of electrical tests

Alina Shurupova,
 Head of Laboratory of promising developments

