

# TESTING CENTER OF CABLE PRODUCTS

Autogennaya str. 7, Kharkov, 61099, Ukraine,  
Phone: +38 057 754 52 75  
E-mail: lab@yuzhcable.com.ua

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 20  
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 (Um = 1,2 kV) up to 30 kV (Um = 36 kV) - Part 1: Cables for rated voltages of 1 kV (Um = 1,2 kV) and 3 kV (Um = 3,6 kV)  
Test procedure Tests  
Cable type CABLU ARMAT 0,6/1 kV 4×70 Al  
Trade mark YUZH CABLE  
Rating(s) Uo/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	<b>Electrical tests</b>		BU	BN	BK	GY	
1.1	Resistance of conductors (Ω/km)	Max. 0,443	0,439	0,440	0,440	0,438	Pass
1.2	Volume resistivity of insulation at (90±2)°C (Ω·cm)	Min. 10 <sup>12</sup>	3,02	3,05	2,95	3,12	Pass
	Insulation resistance constant K <sub>i</sub> at (90±2)°C (MΩ·km)	Min. 3,67	9,01	9,08	9,12	9,04	Pass
1.3	Voltage test 3,5 kV/5 min	No breakdown of the insulation	No breakdown of the insulation				Pass
2	<b>Non-electrical tests</b>						
2.1	Measurement of thickness of insulation - nominal value (mm)	1,1	1,15	1,15	1,13	1,13	Pass
2.2	Measurement of thickness of extruded inner covering - nominal value (mm)	1,2	1,52				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)	2,2	2,26				Pass
2.5	Outer diameter of cable (mm)		38				

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Ref No.	Tests	Prescribed	Observed				Verdict
2.6	Mechanical properties of insulation						
	<i>Without ageing:</i>						
	Tensile strength (N/mm <sup>2</sup> )	Min. 12,5	21,5	21,1	20,2	21,3	Pass
	Elongation-at-break (%)	Min. 200	390	380	385	370	Pass
	<i>After ageing in air oven:</i>						
	Duration (h) / Temperature (°C)	168 / (135±3)					
	Tensile strength variation (%)	Max. ±25	-6,6	-4,4	-4,0	-5,6	Pass
	Elongation-at-break variation (%)	Max. ±25	-3,3	-5,0	-6,1	-6,4	Pass
	<i>Hot set test</i>						
	Time under load (min) / Temperature (°C)	15 / (200±3)					
mechanical stress (N/cm <sup>2</sup> )	20						
Elongation under load (%)	Max. 175	80	70	70	75	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 <sup>2</sup> )	Max. 1,0	0,14	0,14	0,16	0,15	Pass	
<i>Shrinkage test</i>							
Duration (h) / Temperature (°C)	1 / (130±3)						
Shrinkage (%)	Max. 4,0	1,8	1,8	2,0	1,9	Pass	
2.7	Mechanical properties of sheath						
	<i>Without ageing:</i>						
	Tensile strength (N/mm <sup>2</sup> )	Min. 12,5		23,0			Pass
	Elongation-at-break (%)	Min. 300		655			Pass
	<i>After ageing in air oven:</i>						
	Duration (h) / Temperature (°C)	240 / (110±2)					
	Elongation-at-break (%)	Min. 300		625			Pass
	<i>Shrinkage test</i>						
Duration (h) / Temperature (°C)	5 / (80±2)						
Heating, cycles	5						
Shrinkage (%)	Max. 3,0		1,6			Pass	
<i>Pressure test at high temperature</i>							
Duration (h) / Temperature (°C)	6 / (110±2)						
Median of the depth of indentation (%)	Max. 50		17			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	-5,9	-6,2	-5,0	-5,1	Pass
	Elongation-at-break variation (%)	Max. ±25	-6,9	-6,8	-6,1	-5,7	Pass
	<i>mechanical properties of sheath:</i>						
	Elongation-at-break (%)	Min. 300	605				Pass

Nikolay Zykov,  
 Head of TCCP

Andrew Konoplev,  
 Head of the Laboratory of electrical tests

Alina Shurupova,  
 Head of Laboratory of promising developments

