

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 23

Tested by Andrew Konoplev, Alina Shurupova

Approved by Nikolay Zykov

Date of issue 20-Jan-25

Testing laboratory Testing center of cable products,
Address Autogennaya str. 7, Kharkov, 61099, Ukraine,
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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 АПвБ6Шп-1 4×95

Trade mark YUZH CABLE

Rating(s) Uo/U 0,6/1

Dates of receipt of test item 08-Jan-25

Dates of performance of tests From 09-Jan-25 to 17- Jan-25

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. 0,320	0,313	0,312	0,312	0,315	Pass
1.2	Volume resistivity of insulation at (90±2)°C (Ω·cm)	Min. 10 ¹²	2,72	2,75	2,81	2,90	Pass
	Insulation resistance constant K _i at (90±2)°C (MΩ·km)	Min. 3,67	8,41	8,48	8,52	8,44	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)	1,1	1,16	1,14	1,12	1,13	Pass
2.2	Measurement of thickness of extruded inner covering - nominal value (mm)	1,2	1,55				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)	2,3	2,34				Pass
2.5	Outer diameter of cable (mm)		39				

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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	20,5	21,4	20,8	21,2	Pass
	Elongation-at-break (%)	Min. 200	350	360	380	340	Pass
	<i>After ageing in air oven:</i>						
	Duration (h) / Temperature (°C)	168 / (135±3)					
	Tensile strength variation (%)	Max. ±25	-2,2	-3,4	-2,9	-3,8	Pass
	Elongation-at-break variation (%)	Max. ±25	-3,4	-4,1	-3,5	-4,7	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	60	70	60	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 ²)	Max. 1,0	0,12	0,15	0,11	0,17	Pass
	<i>Shrinkage test</i>						
	Duration (h) / Temperature (°C)	1 / (130±3)					
	Shrinkage (%)	Max. 4,0	1,6	1,5	1,8	1,3	Pass
2.7	Mechanical properties of sheath <i>Without ageing:</i>						
	Tensile strength (N/mm ²)	Min. 12,5		22,7			Pass
	Elongation-at-break (%)	Min. 300		650			Pass
	<i>After ageing in air oven:</i>						
	Duration (h) / Temperature (°C)	240 / (110±2)					
	Elongation-at-break (%)	Min. 300		615			Pass
	<i>Shrinkage test</i>						
	Duration (h) / Temperature (°C)	5 / (80±2)					
	Heating, cycles	5					
	Shrinkage (%)	Max. 3,0		1,5			Pass
	<i>Pressure test at high temperature</i>						
	Duration (h) / Temperature (°C)	6 / (110±2)					
	Median of the depth of indentation (%)	Max. 50		12			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) <i>mechanical properties of insulation:</i> Tensile strength variation (%) Elongation-at-break variation (%)	168 / (100±2) Max. ±25 Max. ±25	-5,2 -6,3	-5,7 -5,9	-4,8 -6,7	-6,1 -5,5	Pass Pass
	<i>mechanical properties of sheath:</i> Elongation-at-break (%)	Min. 300	600				Pass

Nikolay Zykov,
Head of TCCP

Andrew Konoplev,
Head of the Laboratory of electrical tests

Alina Shurupova,
Head of Laboratory of promising developments

