

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 22

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 5×16

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							
			GR	BU	BN	BK	GY	
1.1	Resistance of conductors (Ω/km)	Max. 1,91	1,88	1,87	1,85	1,85	1,88	Pass
1.2	Volume resistivity of insulation at (90±2)°C (Ω·cm)	Min. 10 ¹²	5,63	5,64	5,75	6,02	5,98	Pass
	Insulation resistance constant K _i at (90±2)°C (MΩ·km)	Min. 3,67	7,95	8,15	8,22	8,28	7,99	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)	0,7	0,74	0,74	0,75	0,73	0,75	Pass
2.2	Measurement of thickness of extruded inner covering - nominal value (mm)	1,0	1,15					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)	1,7	1,85					Pass
2.5	Outer diameter of cable (mm)		22					

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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	18,8	19,4	18,5	19,8	18,0	Pass
	Elongation-at-break (%)	Min. 200	445	440	500	420	520	Pass
	<i>After ageing in air oven:</i>							
	Duration (h) / Temperature (°C)	168/(135±3)						
	Tensile strength variation (%)	Max. ±25	-4,9	-4,4	-5,1	-3,8	-5,7	Pass
	Elongation-at-break variation (%)	Max. ±25	-6,0	-6,2	-7,7	-7,2	-6,7	Pass
	<i>Hot set test</i>							
	Time under load (min) / Temperature (°C)	15/(200±3)						
	mechanical stress (N/cm ²)	20						
2.7	Elongation under load (%)	Max. 175	60	65	70	65	80	Pass
	Permanent elongation after cooling (%)	Max. 15	0	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	0,20	0,21	0,22	0,19	0,21	Pass
	<i>Shrinkage test</i>							
	Duration (h) / Temperature (°C)	1/(130±3)						
	Shrinkage (%)	Max. 4,0	1,9	1,9	2,0	2,1	1,8	Pass
	Mechanical properties of sheath <i>Without ageing:</i>							
	Tensile strength (N/mm ²)	Min. 12,5			20,9			Pass
2.7	Elongation-at-break (%)	Min. 300			630			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			1,61			Pass
	<i>Pressure test at high temperature</i>							
	Duration (h) / Temperature (°C)	6/(110±2)						
2.7	Median of the depth of indentation (%)	Max. 50			22			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	-8,3	-8,9	-8,5	-9,2	-9,9	Pass
	Elongation-at-break variation (%)	Max. ±25	-9,2	-9,6	-9,8	-10,3	-10,6	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

