

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 25

Tested by Andrew Konoplev, Alina Shurupova

Approved by Nikolay Zykov

Date of issue 09-Feb-24

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 АBBГнr LS 5×25-0,66

Trade mark YUZH CABLE

Rating(s) Uo/U 0,66

Dates of receipt of test item 29-Jan-24

Dates of performance of tests From 30-Jan-24 to 08-Feb-24

Summary of test results PASS

Ref No.	Tests	Prescribed	Observed					Verdict
1	Electrical tests							
			GR	BU	BN	BK	GY	Pass
1.1	Resistance of conductors (Ω/km)	Max. 1,20	1,16	1,14	1,17	1,14	1,16	Pass
1.2	Volume resistivity of insulation at 20°C (Ω·cm)	Min. 10 ¹³	8,25	8,16	8,25	8,37	9,02	Pass
	at 70°C (Ω·cm)	Min. 10 ¹⁰	4,96	5,19	5,08	5,11	5,85	Pass
	Insulation resistance constant K _i at 20°C (MΩ·km)	Min. 36,7	38,17	37,22	38,05	37,44	38,24	Pass
	at 70°C (MΩ·km)	Min. 0,037	0,058	0,049	0,057	0,052	0,045	Pass
1.3	Voltage test 2,4 kV/4 h	No breakdown of the insulation	No breakdown of the insulation					Pass
2	Non-electrical tests							
2.1	Measurement of thickness of insulation - value (mm)	1,2 _{-0,22}	1,25	1,22	1,24	1,23	1,24	Pass
2.2	Measurement of thickness of sheath - value (mm)	1,8	1,93					Pass

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Ref No.	Tests	Prescribed	Observed					Verdict
2.3	Mechanical properties of insulation <i>Without ageing:</i>							
	Tensile strength (N/mm ²)	Min. 12,5	15,4	14,7	14,9	15,0	14,2	Pass
	Elongation-at-break (%)	Min. 150	300	280	285	300	275	Pass
	<i>After ageing in air oven:</i>							
	Duration (h) / Temperature (°C)	168 / (100±2)						
	Tensile strength (N/mm ²)	Min. 12,5	14,8	14,1	14,2	14,1	13,4	Pass
	Elongation-at-break (%)	Min. 150	283	262	268	277	257	Pass
	Tensile strength variation (%)	Max. ±25	-4,2	-3,9	-4,8	-5,8	-5,5	Pass
	Elongation-at-break variation (%)	Max. ±25	-5,6	-6,5	-6,0	-7,7	-6,7	Pass
	<i>Pressure test at high temperature</i>							
	Duration (h) / Temperature (°C)	4 / (80±2)						
	Median of the depth of indentation (%)	Max. 50	25	27	27	24	25	Pass
	<i>Heat shock test</i>							
	Duration (h) / Temperature (°C)	1 / (150±3) No cracks	No cracks	No cracks	No cracks	No cracks	No cracks	Pass
2.4	Mechanical properties of sheath <i>Without ageing:</i>							
	Tensile strength (N/mm ²)	Min. 12,5			14,5			Pass
	Elongation-at-break (%)	Min. 150			255			Pass
	<i>After ageing in air oven:</i>							
	Duration (h) / Temperature (°C)	168 / (100±2)						
	Tensile strength (N/mm ²)	Min. 12,5			13,5			Pass
	Elongation-at-break (%)	Min. 150			227			Pass
	Tensile strength variation (%)	Max. ±25			-7,2			Pass
	Elongation-at-break variation (%)	Max. ±25			-10,9			Pass
	<i>Heat shock test</i>							
	Duration (h) / Temperature (°C)	1 / (150±3) No cracks			No cracks			Pass
	<i>Pressure test at high temperature</i>							
	Duration (h) / Temperature (°C)	6 / (80±2)						
	Median of the depth of indentation (%)	Max. 50			28			Pass

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Ref No.	Tests	Prescribed	Observed					Verdict
2.5	Additional ageing test on pieces of completed cables	168 / (100±2)						
	Duration (h) / Temperature (°C)							
	<i>mechanical properties of insulation:</i>							
	Tensile strength variation (%)	Max. ±25	-6,9	-5,2	-5,2	-5,7	-4,8	Pass
	Elongation-at-break variation (%)	Max. ±25	-7,4	-6,3	-6,3	-5,9	-6,7	Pass
	<i>mechanical properties of sheath:</i>							
	Tensile strength variation (%)	Max. ±25				-8,4		Pass
	Elongation-at-break variation (%)	Max. ±25				-10,8		Pass
2.6	Vertical flame propagation							
	- time of application of flame s	120						
	- distance between the lower edge of the top support and the onset of charring mm	Min 50				375		Pass
	- distance between the lower edge of the top support and the charring extends downwards mm	Max 540				508		Pass
2.7	Flame spread of vertically-mounted bunched cables category A							
	- time of application of flame min	40						
	- damaged part length m	Max 2,5				0,9		Pass
2.8	Smoke emission %	Min 60				75		Pass
2.9	Assessment to halogens							
	- pH	<4,3				3,8		Pass
	- conductivity μS/mm	>10				25,7		Pass
	- amount of halogens mg/g	≤150				115,3		Pass

Nikolay Zykov,
Head of TCCP

Andrew Konoplev,
Head of the Laboratory of electrical tests

Alina Shurupova,
Head of Laboratory of promising developments

