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No. of the Test Report: 605175-01/01

Issued: 23. 1. 2017



TEST REPORT

Name of product: Cables
Type of product: AER
Ratings: 1x16+25 mm²; 3x(16-120)+(25-95) mm²;
4x(16-25)+(25-35) mm², 0,6/1kV
Manufacturer: A KABLO SANAYİ TİCARET A.Ş. Orta Mahalle Atayolu
Caddesi No:22 , Tuzla/İstanbul, the Republic of Turkey
Production site: same of manufacture
Ordering firm: ŞAHİNLER METAL SAN. TİC. A.Ş. Orta Mahalle
Atayolu Caddesi No:22 , Tuzla İstanbul,
the Republic of Turkey
Number of tested samples: 2
Samples submitted on: 20. 12. 2016
Location of testing: EZÚ
Tested from 2. 1. 2017 **through** 20. 1. 2017
Other data: tested: AER 3x16+25 mm²; AER 3x120+95 mm²

The product was tested according to:

HD 626.1 S1:96+A1:97 (ČSN 347614-1:99), HD 626.2 S1:96 (ČSN 347614-2:00),
HD 626.5D S1:96 (ČSN 347614-5D:01), HD 605.S2:08 (ČSN 347010-82:09)

Compiled by: Jiří Kašpar



Approved by: Jan Tůma
Testing laboratory technical manager

Test results stated in the test report apply only to the tested subject and unless specified otherwise in the test report, the tests were performed using the method and under the conditions determined in the test regulations, technical norm, instructions for use and information provided by the manufacturer on the tested subject and using accessories required by the manufacturer.

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When referring to services of EZÚ, s. p., as an accredited laboratory, the customer specified in this report must use the following formulation: "Tested by test laboratory no. 1056, accredited by CAI".

Test AER 3 x 120 + 95 mm ²	Prescribed	Observed
Construction		
cl. 5 ČSN 34 7614-1 cl. 2 ČSN 34 7614-5D Number of cores Design of conductors Material of core Insulation, type Uninsulated conductor PEN (support rope) Other packages	twisted paralelly annealed copper, aluminum other alloy linear polyethylene - PE	3 pass - aluminum - PE type TIP-1 aluminum alloy -
Identification		
cl. 2 ČSN 34 7614-5D cl. 3 a 4 ČSN 34 7614-1 Marking the manufacturer Marking of the cores The distance between the markings Cognitive thread color code	legible, indelible, continuous projections with ribs 200 mm max.	printing on insulation II: A KABLO AER 3x120+95 mm ² 0,6/1 kV <>TSE<> TS 11654 CE MADE IN TURKEY using projections 2, 3 or 4 tabs method G 85 mm -
Color of insulation		
cl. 5.2.3 ČSN 34 7614-1 color design	clear, recognizable durable	black
External dimensions		
Annex A1 tab. 1.2 ČSN 34 7614-5D ČSN EN 60811-203 outer diameter of the cable mm	med. 42, max. 47	44,20

Type : AER 3 x 120 + 95 mm²
 AER 3 x 16 + 25 mm²

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Test	Prescribed	Observed		
Voltage test on cores cl. 3 ČSN 34 7614-5D In water 20°C 1 h. Time application of voltage 60min. core/ other core + water 4000 V	no breakdown	no breakdown		
Core				
Construction cl. 5.1 ČSN 34 7614-1 cl. 2 ČSN 34 7614-5D Material	annealed copper - tined not tined aluminum other alloy	- - pass -		
Design cl. 5.1 ČSN 34 7614-1 cl. 2 ČSN 34 7614-5D wire diameter mm number of wire ks outer diameter mm	without defects, fractures, blades 19 12,50 - 13,10	pass Core II Core III Core IIII 1+7+12 1+7+12 1+7+12 12,85 12,91 12,80		
Measurement of the resistance of conductors cl. 5.1.2 ČSN 34 7614-1 insert A1 tab. 1.1 ČSN 34 7614-5D c l.3.1. ČSN 34 7614-2 Prescribed Ω/km 20°C	max. 0,253	0,2498	0,2496	0,2501
Messenger				
Construction cl. 2 ČSN 34 7614-5D Material	annealed copper - tined not tined aluminum other alloy	- - - aluminum alloy		
Design cl. 2 ČSN 34 7614-5D wire diameter mm number of wire ks outer diameter mm	without defects, fractures, blades nom. 7 11,10 - 11,70	pass -- 1+6 11,35		

Type : AER 3 x 120 + 95 mm²
 AER 3 x 16 + 25 mm²

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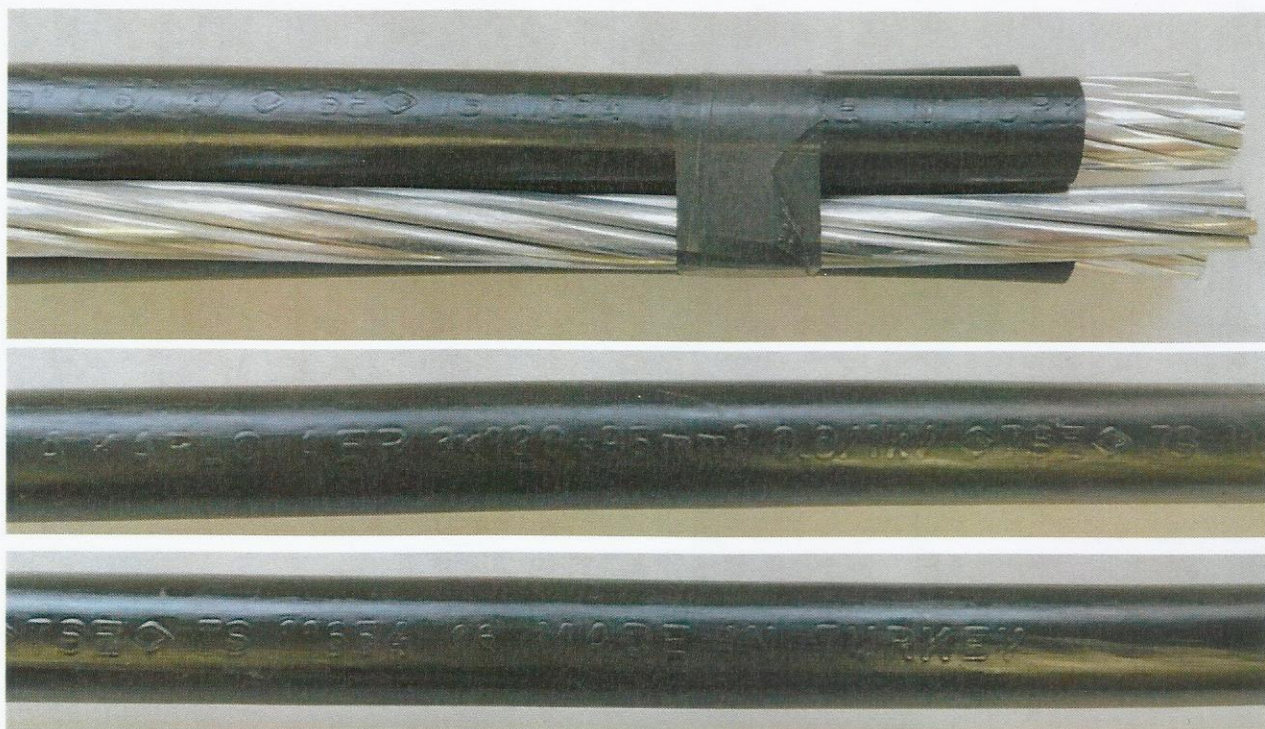
Test	Prescribed	Observed		
Measurement of the resistance of messenger cl.2, annex A1 tab. 1.2 ČSN 34 7614-5D Prescribed Ω/km 20°C	max.0,363	0,351		
Tensile strength of messenger cl.3.4, insert A1 tab. 1.2 ČSN 34 7614-5D Prescribed kN	min. 27,9	28,16		
Test of insulation				
Design cl. 5.2. ČSN 34 7614-1	no defects, cracks, metal particles, uniformly colored, not sticky	pass		
Measurement of thickness cl. 5.2.4 ČSN 34 7614-1 annex A1 tab. 1.1 ČSN 34 7614-5D ČSN EN 60811-201		Core II	Core III	Core III
nominal mm	2,0	--	--	--
medium mm	--	2,31	2,37	2,30
minimum mm	1,70	2,19	2,09	1,95
Mechanical properties cl. 5.3.5 tab.1 ČSN 34 7614-1 cl. 4.2.1 ČSN 34 7614-5D ČSN EN 60811-501 ČSN EN 60811-401				
before ageing tensile strength MPa elongation %	min. 10 min. 350	20,043 559,692	22,051 536,146	24,368 736,664
after ageing in air oven (100±2)°C 10x24 hod. tensile strength MPa elongation %	- min. 300	22,980 478,306	24,277 436,310	22,998 618,582
difference tensile strength MPa elongation %	max. ±25 max. ±25	+14,653 -14,541	+10,095 -18,621	-5,622 -16,029
Shrinkage tab. 2 ČSN 34 7614-1 cl. 3.4 ČSN 34 7614-5D ČSN EN 60811-502		Core 1	Core 2	Core 3
(100±2)°C 1 hod. shrinkage %	max. 4	2,0	1,5	2,5

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Test	Prescribed	Observed		
Bending at low temperature tab. 2 ČSN 34 7614-1 cl. 3.4 ČSN 34 7614-5D ČSN EN 60811-505 -40°C 16 hod. elongation %	max. 20	Core 1 >30	Core 2 >30	Core 3 >30
Carbon black content tab.2 ČSN 34 7614-1 cl.3.4 ČSN 34 7614-5D ČSN EN 60811-605 carbon black content %	2,5 ± 0,5	2,29		

foto sample



Test	Prescribed	Observed
AER 3 x 16 + 25 mm²		
Construction		
cl.5 ČSN 34 7614-1 cl.2 ČSN 34 7614-5D		
Number of cores Design of conductors	twisted paralelly	3 pass -
Material of core	annealed copper, aluminum other alloy	aluminum -
Insulation, type	linear polyethylene - PE	PE type TIP-1
Uninsulated conductor PEN (support rope)		aluminum alloy
Other packages		-
Identification		
cl. 2 ČSN 34 7614-5D cl. 3 a 4 ČSN 34 7614-1 Marking the manufacturer	legible, indelible, continuous	printing on insulation II: A KABLO AER 3x16+25 mm ² 0,6/1 kV <>TSE<> TS 11654 CE MADE IN TURKEY
Marking of the cores	projections with ribs	using projections 2, 3 or 4 tabs method G
The distance between the markings Cognitive thread color code	200 mm max.	112 mm -
Colour of insulation		
cl. 5.2.3 ČSN 34 7614-1		
color design	clear, recognizable durable	black
External dimensions		
příloha A1 tab. 1.2 ČSN 34 7614-5D ČSN EN 60811-203		
outer diameter of the cable mm	med. 20, max. 22	20,60

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Test	Prescribed	Observed		
Voltage test on cores cl. 3 ČSN 34 7614-5D in water 20°C 1 h. time application of voltage 60min. core/ other core + water 4000 V	no breakdown	no breakdown		
Core				
Construction cl. 5.1 ČSN 34 7614-1 cl. 2 ČSN 34 7614-5D Material	annealed copper - tined not tined aluminum other alloy	- - pass -		
Design cl. 5.1 ČSN 34 7614-1 cl. 2 ČSN 34 7614-5D wire diameter mm number of wire ks outer diameter mm	without defects, fractures, blades	pass		
		Core 1	Core 2	Core 3
Measurement of the resistance of conductors cl. 5.1.2 ČSN 34 7614-1 annex A1 tab. 1.1 ČSN 34 7614-5D cl. 3.1. ČSN 34 7614-2 Prescribed Ω/km 20°C	max. 1,91	1,8469	1,8417	1,8430
Messenger				
Construction cl. 2 ČSN 34 7614-5D Material	annealed copper - tined not tined aluminum other alloy	- - - aluminum alloy		
Desing cl. 2 ČSN 34 7614-5D wire diameter mm number of wire ks outer diameter mm	without defects, fractures, blades	pass		
Measurement of the resistance of messenger cl. 2, insert A1 tab. 1.2 ČSN 34 7614-5D Prescribed Ω/km 20°C	max. 1,38	1,3726		

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foto sample



Measuring and testing equipment

Used - X	Type	key number
X	H.V. testing equipment 80 kV	110019
X	Resistomat	00-6251 + 00-6249
X	Slide caliper	295
X	Profileprojector KSM	00-6323
X	Cooling equipment	11 0286
X	Stopwatch	N700456
X	UTS 3 kN	11 0018
X	Digital micrometer Mitutoyo	550042
X	Meter KINEX 50 cm	N 400003
X	Thermometer	93-5494
X	Thermostat Heraeus (1)	110021/1
X	Thermostat Heraeus (2)	11 0021/2
X	SCHOPERUV 100kN	000 302
X	Combustion chamber	110239
X	Digital gravity	88-4921

If an uncertainty of measurement is given, the expanded a measurement uncertainty is the product of the standard measurement uncertainty and coverage factor $k = 2$, which corresponds to a coverage probability of approximately 95% in a normal distribution.

Laboratory conditions during the test were in accordance with specifications of the standards listed on the first page of this test report.

Tested by: Jiří Kašpar
Date: 23. 1. 2017