

GCST : 4314-78
Title : ELECTRICAL GRADE TAPE
TECHNICAL REQUIREMENTS
Translated
and
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Note:

The following terms relating to textile technology are not clear.

Page 2 Table 1, column heading 1;

Номер заправки - Mix number (?)

Page 8; clause 1.7 *плохое ткачество* - poor weaving (?)

Page 8; clause 1.8 *недосяка*

Page 3; column heading "Texture" ^{текст.} meko - tex - A unit to measure the thickness of thread. Thread of 1 tex has a mass of 1 gram per kilometre of length or 1 milligram per metre. Equal 9 denier.

C.D.S.&T.

USSR STATE STANDARD

Electrical Grade Tape
Technical Requirements

GOST 4514-78
This supersedes
GOST 4514-71

Valid upto 01.07.1984

The present standard relates to tapes formed from cotton and polyester yarn and processed on ribbon looms with and without shuttle to be used directly in electrical articles or in the manufacture of insulation tape.

1. Technical Requirements

1.1 Tapes must be manufactured in conformity with the requirements of the present standard.

1.2 Tapes must conform to specimens approved in the established manner in respect of external appearance and texture.

1.3 Raw materials conforming to GOST 16455-70 are used in the manufacture of tapes.

Raw materials conforming to other standards and technical documentation may be used provided they are not lower in quality than those specified in Table 1.

Mix number	Tape nomenclature	Conventional designation of tape	Tape width, mm	Tape thickness, mm	Breaking load of tape, along the warp not less than		Elongation at rupture, % not less than
					N	KgF	
1	Киперная Twill	K-8-1	8±0,5	0,45 ^{+0,02}	127,53	13	9
2	То же	K-10-2	10±0,5	0,45 ^{+0,02}	137,34	14	9
3	» -do-	K-12-3	12±0,5	0,45 ^{+0,02}	166,77	17	9
4	»	K-12-4	12±0,5	0,45 ^{+0,03}	166,77	17	9
5	»	K-15-5	15±0	0,45 ^{+0,02}	206,01	21	9
6	»	K-15-6	15±0	0,45 ^{+0,02}	206,01	21	9
7	»	K-20-7	20±0,5	0,45 ^{+0,02}	255,06	26	9
8	»	K-20-8	20±0,5	0,47 ^{+0,02}	255,06	26	9
9	»	K-25-9	25±0,5	0,45 ^{+0,02}	313,92	32	9
10	»	K-25-10	25±0,5	0,47 ^{+0,03}	313,92	32	9
11	»	K-30-11	30±0,5	0,45 ^{+0,02}	362,97	37	9
12	»	K-30-12	30±0,5	0,47 ^{+0,03}	362,97	37	9
13	»	K-35-13	35±1,0	0,45 ^{+0,02}	421,83	43	9
14	»	K-35-14	35±1,0	0,47 ^{+0,03}	421,83	43	9
15	»	K-40-15	40±1,0	0,45 ^{+0,02}	470,88	48	9
16	»	K-40-16	40±1,0	0,47 ^{+0,03}	470,88	48	9
17	»	K-50-17	50±0	0,45 ^{+0,02}	568,98	58	9
18	Трифурная	T-10-18	10±0,5	0,25 ^{+0,02}	88,29	9	8
19	То же	T-12-19	12±0,5	0,25 ^{+0,02}	117,91	11	8
20	» -do-	T-15-20	15±0	0,16±0,02	323,73	33	30
21	»	T-15-21	15±0	0,25 ^{+0,02}	127,53	13	8
22	»	T-15-22	15±0	0,25 ^{+0,02}	127,53	13	9
23	»	T-20-23	20±0,5	0,25 ^{+0,02}	147,15	15	9
24	»	T-20-24	20±0,5	0,16±0,02	392,40	40	30
25	»	T-20-25	20±0,5	0,25 ^{+0,02}	156,96	16	8
26	»	T-20-26	20±0,5	0,25 ^{+0,02}	156,96	16	9
27	»	T-25-27	25±0,5	0,25 ^{+0,02}	174,58	18	8
28	»	T-25-28	25±0,5	0,25 ^{+0,02}	196,20	20	9
29	»	T-25-29	25±0,5	0,16±0,02	490,50	50	30

Mix No.	No. of threads in warp over the full width of tape	Warp thread		Weft thread		Interweaving	Weight per 100 of tape kg.
		Density along weft per cm	Type of raw material Texture	Type of raw material Linear density, tex	Type of raw material Linear density, tex		
2	28-1	16-1	x/6 25 тексХ2	x/6 25	Сиржа 2/2	0,155 ± 0,01	
	32-1	16-1	x/6 25 тексХ2	x/6 25	То же	0,187 ± 0,009	
4	32	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,232 ± 0,011	
	40-1	16-1	x/6 25 тексХ2	x/6 25	*	0,276 ± 0,014	
5	38	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,281 ± 0,014	
	52-1	16-1	x/6 25 тексХ2	x/6 25	*	0,361 ± 0,018	
10	48-1	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,351 ± 0,018	
	66-1	16-1	x/6 25 тексХ2	x/6 25	*	0,462 ± 0,023	
15	62-1	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,450 ± 0,023	
	78-2	16-1	x/6 25 тексХ2	x/6 25	*	0,543 ± 0,027	
20	72-1	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,530 ± 0,027	
	92-2	16-1	x/6 25 тексХ2	x/6 25	*	0,637 ± 0,031	
25	84-2	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,619 ± 0,031	
	104-2	16-1	x/6 25 тексХ2	x/6 25	*	0,723 ± 0,036	
29	96-2	He менее 9Х2	x/6 25 тексХ2	x/6 25	*	0,741 ± 0,037	
	130-2	16-1	x/6 25 тексХ2	x/6 25	*	0,902 ± 0,043	
20	28-1	19-1	x/6 11,8 тексХ2	x/6 15,4	*	0,100 ± 0,005	
	34-1	19-1	x/6 11,8 тексХ2	x/6 15,4	*	0,120 ± 0,006	
20	84	19-1	НПэф 12,5 текс	НПэф 15,6	*	0,154 ± 0,008	
	42-1	19-1	x/6 11,8 тексХ2	x/6 15,4	*	0,152 ± 0,007	
25	32	He менее 12Х2	x/6 15,4 тексХ2	НПэф 12,5	Сиржа равносторонник (полотняное)	0,253 ± 0,007	
	40	He менее 12Х2	x/6 15,4 тексХ2	НПэф 12,5	То же	0,195 ± 0,010	
25	104	19-1	НПэф 12,5 текс	НПэф 15,6	*	0,193 ± 0,010	
	54-1	19-1	x/6 11,8 тексХ2	x/6 15,4	*	0,199 ± 0,010	
29	46	He менее 12Х2	x/6 11,8 тексХ2	x/6 15,4	*	0,199 ± 0,010	
	66-1	19-1	x/6 11,8 тексХ2	x/6 15,4	*	0,244 ± 0,012	
29	56	He менее 12Х2	x/6 11,8 тексХ2	x/6 15,4	*	0,244 ± 0,012	
	128	19-1	НПэф 12,5 текс	НПэф 15,6	*	0,239 ± 0,012	

Not less than

Polyester thread

Tex

cotton

Equilateral linen serge

Стр 4 ГОСТ 4514-78

Mix number	Tape nomenclature	Conventional designation of tape	Tape width, mm	Tape thickness, mm	Breaking load of tape, along the warp not less than		Elongation at rupture, % not less than
					N	kgf	
	Тафтяная Taffeta	T-25-30	25 ± 15	0,25 ^{+0,02}	190,20	20	9
	То же (-do-)	T-30-31	30 ± 15	0,16 ± 0,02	588,60	60	30
	»	T-30-32	30 ± 15	0,25 ^{+0,02}	206,01	21	8
	»	T-30-33	30 ± 15	0,25 ^{+0,02}	235,44	24	8
	»	T-30-34	30 ± 15	0,25 ^{+0,02}	235,44	24	9
	»	T-35-35	35 ± 20	0,25 ^{+0,02}	274,68	28	9
	»	T-35-36	35 ± 20	0,25 ^{+0,02}	237,63	23	8
	»	T-40-37	40 ± 20	0,25 ^{+0,02}	304,11	31	9
	»	T-40-38	40 ± 20	0,25 ^{+0,02}	255,00	20	8
	»	T-50-39	50 ± 20	0,25 ^{+0,02}	313,92	32	8
Light taffeta	Тафтяная разряженная	Tr-15-40	15 ± 10	0,40 ^{+0,02}	127,53	13	8
	То же (-do-)	Tr-20-41	20 ± 15	0,40 ^{+0,02}	150,90	16	8
	»	Tr-25-42	25 ± 15	0,40 ^{+0,02}	170,58	18	8
	»	Tr-30-43	30 ± 15	0,40 ^{+0,02}	206,01	21	8
calico	Миткалевая	M-12-44	12 ± 05	0,22 ^{+0,02}	117,72	12	5
	То же (-do-)	M-16-45	16 ± 10	0,14 ± 0,02	323,73	33	24
	»	M-16-46	16 ± 10	0,22 ^{+0,02}	150,90	15	5
	»	M-20-47	20 ± 15	0,14 ^{+0,02}	392,40	40	26
	»	M-20-48	20 ± 15	0,22 ^{+0,02}	180,39	18	5
	»	M-25-49	25 ± 15	0,14 ± 0,02	490,50	50	26
	»	M-25-50	25 ± 15	0,22 ^{+0,02}	225,63	23	5
	»	M-30-51	30 ± 15	0,14 ± 0,02	588,60	60	26
	»	M-30-52	30 ± 15	0,22 ^{+0,02}	264,87	27	5
	»	M-35-53	35 ± 20	0,22 ^{+0,02}	304,11	31	5
	»	M-40-54	40 ± 20	0,22 ^{+0,02}	343,35	35	5
cambric	Батистовая	B-10-55	10 ± 05	0,18 ^{+0,02}	58,86	6	4
	То же (-do-)	B-12-56	12 ± 05	0,18 ^{+0,02}	78,48	8	5
	»	B-13-57	13 ± 06	Не более 0,23	127,53	13	5
	»	B-16-58	16 ± 10	0,15 ± 0,02	294,30	30	28
	»	B-16-59	16 ± 10	0,18 ^{+0,02}	107,91	11	5
	»	B-20-60	20 ± 15	0,15 ± 0,02	343,35	35	28

Table 1 contd.
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ix No.	No. of threads in warp over the full width of tape	Density along weft per cm	Wef: thread		Wef: thread		Inter weaving	Weight per 100 of tape kg.	
			Type of raw material	Texture	Type of raw material	density, tex			
30	52	Не менее 12x2 Not less than 12x2	x/6	15,4 тексX2	ИПэф	2,5	Сирка равносторонняя (податливая)	0,245±0,012	
	152	19-1	x/6	11,8 текс	ИПэф	3,6	То же	0,387±0,014	
	78-2	19-1	x/6	11,8 тексX2	x/6	3,4	*	0,291±0,011	
	66	Не менее 12x2	x/6	11,8 тексX2	x/6	3,4	*	0,291±0,014	
	60	Не менее 12x2	x/6	15,4 тексX2	ИПэф	2,5	*	0,291±0,014	
	35	70	Не менее 12x2	x/6	15,4 тексX2	ИПэф	2,5	*	0,379±0,017
	90-2	19-1	x/6	11,8 тексX2	x/6	3,4	*	0,348±0,017	
	82	Не менее 12x2	x/6	15,4 тексX2	ИПэф	2,5	*	0,379±0,019	
	106-2	19-1	x/6	11,8 тексX2	x/6	3,4	*	0,381±0,014	
	132-1	19-1	x/6	11,8 тексX2	x/6	3,4	*	0,180±0,024	
40	38-1	13-1	x/6	11,8 тексX2	x/6	2	*	0,114±0,007	
	50-1	13-1	x/6	11,8 тексX2	x/6	2	*	0,186±0,009	
	62-1	13-1	x/6	11,8 тексX2	x/6	2	*	0,113±0,011	
	77-1	13-1	x/6	11,8 тексX2	x/6	2	*	0,300±0,015	
	45	40-1	23-1	x/6	11,8 тексX2	x/6	1	*	0,126±0,006
	84	20-1	ИПэф	12,5 текс	ИПэф	1,5	*	0,119±0,008	
	52-1	23-1	x/6	11,8 тексX2	x/6	1	*	0,168±0,008	
	104	20-1	ИПэф	12,5 текс	ИПэф	1,5	*	0,184±0,009	
	64-1	23-1	x/6	11,8 тексX2	x/6	1	*	0,239±0,010	
	128	20-1	ИПэф	12,5 текс	ИПэф	1,5	*	0,238±0,011	
50	78-2	23-1	x/6	11,8 тексX2	x/6	1	*	0,253±0,013	
	152	20-1	ИПэф	12,5 текс	ИПэф	1,5	*	0,273±0,013	
	90-2	23-1	x/6	11,8 тексX2	x/6	1	*	0,297±0,015	
	106-2	23-1	x/6	11,8 тексX2	x/6	1	*	0,310±0,017	
	116	23-1	x/6	11,8 тексX2	x/6	1	*	0,287±0,020	
	35	40-1	33-2	x/6	5,9 тексX2	x/6	1	*	0,084±0,005
	44-1	30-2	x/6	5,9 тексX2	x/6	1	*	0,093±0,004	
	70	23-1	x/6	5,9 тексX2	x/6	1	*	0,130	
	78	27-1	Сотка	12,5 текс	ИПэф	8	*	0,136±0,007	
	60	80-1	30-2	x/6	5,9 тексX2	x/6	1	*	0,128±0,006
60	102	27-1	ИПэф	12,5 текс	ИПэф	8	*	0,179±0,009	

Polyester thread

Not more than

Mix number	Tape nomenclature	Conventional designation of tape	Tape width, mm	Tape thickness, mm	Breaking load of tape, along the warp not less than		Elongation at rupture, % not less than
					N	kgf	
61	Cambric	20-61	20 \pm 1.5	0.18 \pm 0.02	127.53	13	5
62	-do-	26-62	26 \pm 1.5	0.15 \pm 0.02	392.40	40	28

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Table 1 contd.

No. of threads in warp over the full width of tape	Density along weft per cm	Warp thread		Weft thread		Interweaving	Weight per 100 of tape kg.
		Type of raw material	Texture	Type of raw material	Linear density, tex		
70 ⁻¹	30 ⁻²		5.9 Tex x 2	cotton	10	Eq. - lateral linen serge	0.18 \pm 0.007
126	27 ⁻¹		12.5 Tex	polyester thread	8	- do -	0.223 \pm 0.011

Note: 1. Deviations on the lower side in thickness and on the higher side in the number of yarns and warp are not limited, provided all other parameters remain unaltered.

2. Taffeta tape may be processed on shuttle ribbon looms placing two wefts per shed.

3. Conventional designation of tapes; K-Twill; T-Taffeta; Tp-Thin Taffeta; M-calico; B -cambric. The first two numerals after the letters in the designation indicate width of the tape and the remaining numerals the mix number.

4. Abbreviated designations:

x/8 - cotton thread

HOЭ - polyester thread

1.5 Tapes must be provided in the coarse form without additional finishing.

1.6 Two grades - first and second are established for tapes.

1.7 The following defects in external appearance of tapes are not allowed: dirty or greasy patches, poor weaving.

1.8 The number and size of defects in external appearance must not exceed the values specified in Table 2.

Defect	Size of each defect, cm
Strips along warp (flaw in the web in:hread)	40 in all
Thickening of yarn in warp (not more than threefold)	40 in all
Damage to edge at a depth of 1 mm	40 in all
Strip across tape () not more than 2 mm over the full width of tape, nos.	2
Thickening of weft yarn (more than threefold), nos	2

1.9 The total number of defects in external appearance per 50 m of conventional length of tape should not exceed 10 for first grade and 15 for second grade tape.

1.10 One cut of minimum cut piece length of 3 m is allowed per 50 m of conventional length in first grade tape. The corresponding allowance is two cuts of minimum cut piece length 2 m in second grade tape.

2. Acceptance Rules

2.1 Tape is accepted in batches. GOST 16218.0-70 defines the batch.

2.2 Tape quality with respect to defects in external appearance is checked on 5 % of the packets in a batch.

2.3 GOST 16218.0-70 defines the sampling scale for laboratory tests.

2.4 If unsatisfactory test results are obtained in respect

of even a single parameter, the particular test is repeated on twice the number of samples drawn from the same batch. Repeat test results are applicable to the whole batch.

3. Testing Methods

3.1 GOST 16218.0-70 defines sampling procedure for laboratory tests.

3.2 Linear dimensions are determined as specified in GOST 16218.0-70 with the following additional stipulation: Tape thickness is measured with an instrument at a pressure of $19.6 \cdot 10^4 \text{ Pa}$ (2 kgf/cm^2).

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3.3 Weight is determined as specified in GOST 16218.2-70.

3.4 Density is determined as specified in GOST 16218.4-70.

3.5 Breaking load and elongation are determined as specified in GOST 16218.5-70.

3.6 Quality with respect to defects in external appearance is determined at a rework bench or a rework machine.

4. Packing, Marking, Transport and Storage

4.1 Tapes must be wound into rolls of 50 to 110 m length. The tape length must be marked at the end of each roll.

4.2 Tapes of width upto and including 20 mm are tied up in packets of 20 rolls each and tape of width over 20 mm in packets of ten. Each packet is tied up with string crossing at right angles.

4.3 A tag containing the following particulars is attached to each packet.

manufacturer's name and address;

trade mark;

tape nomenclature;

number of the article;

number of rolls per packet;
grade;
total length;
quality control number;
date of manufacture;
the number of the present standard.

4.4 The method of winding and the number of rolls per packet may be altered by mutual consent between manufacturer and customer.

4.5 Packing, marking, transport and storage are to be done as specified in GOST 7000-66.*

4.6 Case marking is to be done as per GOST 14192-77 with the caution legend "Keep Dry" marked on the case.

5. Manufacturer's Guarantee

5.1 The manufacturer must guarantee conformity of the quality of tapes with the requirements of the present standard provided transport and storage conditions stipulated in the present standard are observed.

5.2 The guaranteed shelf life for tapes is one year from the date of manufacture. Tapes may be used for the prescribed applications beyond the specified period after repeating the tests for conformity with the requirements of the present standard.

*This is in force since 1.1.1980.