

()

INTERSTATE COUNCIL FOR STANDARDIZATION, METROLOGY AND CERTIFICATION
(ISC)

**21631—
2019**



2020

1.0 «
1.2 «
»

1 « 099 « », « », « », « »
2
3 (30 2019 . 123-)

no (3166) 004—97	(3166) 004—97	
	BY KG RU TJ uz	

4 2019 . 1248- 26
1 21631—2019 2020 .
5 21631—76

()
« »



1	.....	1
2	.....	1
3	.....	2
4	.....	3
5	.....	8
6	.....	22
7	.....	23
8	, ,	25
	() 1	26
	()	
	1	31
	() (1,2,3).....	32

Sheets of aluminium and aluminium alloys. Specifications

— 2020—06—01

1

2

9.510

427

1131

1497

2789

3221

3749

90°.

4784

5009

5378

6456

6507

7502

7727

8026

11069

11701

11739.1

11739.2

11739.3

11739.4

11739.5

11739.6

11739.7

11739.8

11739.10

11739.11

11739.12

11739.13

11739.14

11739.15

11739.16

11739.19

11739.20

11739.21

11739.22

11739.23

11739.24

12697.1

12697.2

12697.3

12697.4

12697.5

12697.6

12697.7

12697.8

12697.9

12697.10

12697.11

12697.12

14192

19300

24047

24231

25086

26877

(www.easc.by)

3

3.1

)

1)

2)

3)

4)

-)
- 1) — ;
 - 2) — ;
 - 3) — 2;
 - 4) — ;
 - 5) — ;
 - 6) — 1;
 - 7) — TH;
-)
- 1) — ;
 - 2) — ;
 - 3) — .

1 (

2). 7, 6, 5, . 00, , 1, -

3 , 2,

4,0 ;

-)
- 1) , , —
 - 2) , , -
- .

4

4.1 , 1.

1

8

	600		. 600 1000		. 1000 1400		. 1400 1800		8. 1800 2000	
	-	-	-	-	-	-	-	-	-	-
0,3	-0,04	-0,05	-0,06	-0,08						
0,4	-0,04	-0,05	-0,06	-0,08	-0,10	-0,12				
0,5	-0,04	-0,05	-0,06	-0,08	-0,10	-0,12	-0,10	-0,12		
0,6	-0,05	-0,06	-0,08	-0,10	-0,10	-0,12	-0,11	-0,13		
0,7	-0,05	-0,06	-0,08	-0,10	-0,10	-0,12	-0,11	-0,13		
0,8	-0,06	-0,08	-0,10	-0,12	-0,12	-0,13	-0,12	-0,14	-0,14	-0,16

*	600		600 1000		1000 1400		1400 1600		1800 2000	
	-	-	-	-	-	-	-	-	-	-
0,9	-0,06	-0,08	-0,10	-0,12	-0,12	-0,13	-0,12	-0,14	-0,14	-0,16
1,0	-0,08	-0,10	-0,12	-0,15	-0,14	-0,16	-0,15	-0,17	-0,16	-0,18
1,2	-0,08	-0,10	-0,12	-0,15	-0,14	-0,16	-0,15	-0,17	-0,18	-0,20
1,5	-0,10	-0,15	-0,14	-0,20	-0,18	-0,22	-0,20	-0,25	-0,24	-0,26
1,6	-0,10	-0,15	-0,14	-0,20	-0,18	-0,22	-0,22	-0,25	-0,24	-0,26
1,8	-0,10	-0,15	-0,16	-0,20	-0,20	-0,22	-0,22	-0,25	-0,24	-0,26
1,9	-0,10	-0,15	-0,16	-0,20	-0,20	-0,22	-0,22	-0,25	-0,24	-0,26
2,0	-0,10	-0,15	-0,16	-0,20	-0,20	-0,24	-0,24	-0,26	-0,25	-0,27
2,5	-0,12	-0,20	-0,18	-0,25	-0,22	-0,28	-0,26	-0,29	-0,28	-0,30
3,0	-0,14	-0,25	-0,20	-0,30	-0,26	-0,30	-0,28	-0,34	-0,33	-0,35
3,5	-0,16	-0,25	-0,22	-0,30	-0,28	-0,32	-0,30	-0,35	-0,34	-0,36
4,0	-0,18	-0,25	-0,24	-0,30	-0,32	-0,35	-0,34	-0,36	-0,35	-0,37
4,5	-0,20	-0,25	-0,26	-0,30	-0,34	-0,35	-0,34	-0,36	-0,35	-0,37
5,0	-0,24	-0,30	-0,30	-0,35	-0,34	-0,36	-0,35	-0,37	-0,36	-0,38
5,5	-0,24	-0,30	-0,30	-0,35	-0,34	-0,36	-0,35	-0,37	-0,36	-0,38
6,0	-0,28	-0,30	-0,35	-0,40	-0,38	-0,41	-0,40	-0,42	-0,41	-0,43
6,5	-0,28	-0,30	-0,35	-0,40	-0,38	-0,41	-0,40	-0,42	-0,41	-0,43
7,0	-0,28	-0,30	-0,35	-0,40	-0,40	-0,42	-0,41	-0,43	-0,42	-0,44
7,5	-0,28	-0,30	-0,35	-0,40	-0,40	-0,42	-0,41	-0,43	-0,42	-0,44
8,0	-0,33	-0,35	-0,40	-0,45	-0,44	-0,46	-0,45	-0,47	-0,46	-0,48
8,5	-0,33	-0,35	-0,40	-0,45	-0,44	-0,46	-0,45	-0,47	-0,46	-0,48
9,0	-0,33	-0,35	-0,40	-0,45	-0,45	-0,47	-0,46	-0,48	-0,47	-0,49
9,5	-0,33	-0,35	-0,40	-0,45	-0,45	-0,47	-0,46	-0,48	-0,47	-0,49
10,0	-0,38	-0,40	-0,45	-0,50	-0,48	-0,50	-0,48	-0,50	-0,48	-0,50
10,5	-0,38	-0,40	-0,45	-0,50	-0,48	-0,50	-0,48	-0,50	-0,48	-0,50

1

5

±5 %

5

2

4.1.1

$$\sigma = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2}}{2}$$

8 — ;
 H_{mjn} 8_{min} — ;
 , / 3.
 .1— .5 ().
 2.85 / 3, -

4.2

2

	7, 6, 5.	10,5 5,0	600, 800, 900, 1000, 1200. 1400, 1500, 1600, 1800, 2000	2000
	. 1. 00.		600, 800, 900, 1000, 1200. 1400, 1500, 1600, 1800, 2000	2000
	7, 6, 5. . . 1, , , , , 2, 5. 1 . 16 , 95-1 . 95-2 . 1 . 8 1 , 1.		1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000
	95 1915		1000, 1200, 1425, 1500, 2000 1200, 1500, 2000	2000 7000 2000 7000
	7, 6, 5. . . 1, ,	0,3 10,5	600, 800, 900, 1000, 1200, 1400, 1500, 1600, 1800, 2000	2000
	7, 6, 5. . . 1, , . . 2 , , ,	0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 4000
		0,7 10,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000
	. 5, .	0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 7000
		0,7 10,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000
		2,0 5,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000
	1565	0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 7000
		0,7 10,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000
	1580	1,0 10,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000

	12	0,5 4,0	1200, 1500	3000 4000
	1, 16, 16, 16	0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 4000
		0,7 4,0	1000, 1200, 1400, 1500, 1600, 1800	2000 7000
		4,0 10,5	2000	2000 7000
	16	0,5 0,7	1200, 1500	2000 4000
		0,7 4,0		2000 7000
	95	0,5 0,7	1000, 1200, 1425, 1500	2000 4000
		0,7 4,0	1000, 1200, 1425, 1500, 2000	2000 7000
		4,0 10,5		
	95-2, 95-2, 95-1, ,	1,0 10,5	1200, 1400, 1500	2000 7000
	1, 1, 1	0,8 10,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7000
	1915	0,8	1200	2000 5000
		1,0 4,5	1200, 1500	
	7, 6, 5, , , 1, 00.	0,8 4,5	1000, 1200, 1400, 1500	2000 4000
	, , 2,	0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 7000
		0,7 4,0	1000, 1200, 1400, 1500, 1600, 1800, 2000	
	12	0,5 4,0	1200, 1500	3000 4000
	7, 6, 5, , 0, 1, .	0,3 10,5	600, 800, 900, 1000	2000
		0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 7000
		0,7 4,0	1000, 1200, 1400, 1500, 1600, 1800, 2000	
		1,0 4,5	1000, 1200, 1400, 1500	2000 4000
	, , 2	0,5 0,7	1000, 1200, 1400, 1500, 1600	2000 7000
		0,7 4,0	1000, 1200, 1400, 1500, 1600, 1800, 2000	
	1, 1, 1,	0,8 4,0	1000, 1200, 1500	2000 7000

2

	, 1 . 16 , 16, 16	0,5 0,7	1000, 1200, 1400,1500. 1600	2000 5000
		. 0,7 10,5	1000, 1200, 1400, 1500, 1600, 1800, 2000	2000 7200
	16	0,5 4,0	1200. 1500	2000 7200
	19	0,5 10,5	600, 800, 900,1000, 1200, 1400.1500,1600,1800, 2000	2000 7200
	95-2 , 1 . 1, 1 , 95- 1 ,	0,8 10,5	1000, 1200, 1500. 1600,1800, 2000	2000 7000
	1915	1.0 4,5	1200, 1500	2000 5000
. 4.5 10,5		1200. 1500. 2000	2000 7000	
		0.5 0,7	1000. 1200, 1400,1500,1600	2000 5000
		. 0.7 10,5	1000.1200.1400.1500.1600. 1800, 2000	2000 7000
	95	0.5 0,7	1000, 1200, 1425. 1500	2000 5000
		. 0.7 4,0	1000. 1200, 1425.1500. 2000	2000 7200
		. 4,0 10,5	1000, 1200, 1425.1500. 2000	2000 7000
- -	16 , 16, 16	1,5 7,5	1000, 1200, 1400, 1500	2000 7200

4.3

3.

3

8

5,0	1000	+6.0	+8.0
	. 1000	—	+10
. 5.0	1000	+10	+12
	. 1000	—	+15
1 4,0 — 2 5.0	40 2000 60	4.0 —	25 2 -

5

	. %											
												-
												-
1. 16. ' 1.	99,30	—	0,30	0,30	0,02	0,025	0.1	0,15	0.05	0,02	—	0,70
95, 95-1, 95-2	-	0,9— 1.3	0,3	0.3	—	0,025	—	0,15	—	0,05	0,1	—

5.3

6.

6

0.5	1,9	.	1,5	4.0	8,0
. 1.9	4.0	.	1.5	2.0	4,0
. 4.0	10,5	.	1.5	2.0	—

4,0 %

5.4

5.5

7.

5.6

8.

5.7

NaOH 50 °C

1 3

30 %-

5—6 %-

HNO₃.

					(/ 2)	(Tq 2> / 2)	1/0=11.3^5, %	
7. 6, 5. , . 1. 00,	7 , 6 , 5 . . .	1 , .		0.3 0.5 .	60 (6,0)	—	20.0	
				. 0,5 0,9 .	60 (6,0)	—	25.0	
				. 0,9 10,5 .	60 (6,0)	—	30,0	
	7 2, 6 2, 5 2. 0 2. 0 2. 1 2, 00 2, 2				0.8 4,5 .	100(10,0)	—	6.0
					0.3 0,8 .	145(15,0)	—	3.0
					. 0,8 3,5 .	145(15,0)	—	4,0
	7. 6, 5, , , 1, 00.	1 . 00 ,			. 3,5 10,5 .	130 (13,0)	—	5,0
					5,0 10,5 .	70 (7,0)	—	15.0
					0.5 0.7 .	90 (9,0)	—	18,0
					. 0,7 3,0 .	90 (9,0)	—	22.0
. 3,0 10,5 .					90 (9,0)	—	20,0	
2, 2					0,5 3,5 .	145 (15,0)	—	5,0
					. 3,5 4,0 .	145(15,0)	—	6.0

					(' / 2)	(< / 02- 2)	/ = 11.3^Fq, 8. %	
				0.5	185(19,0)	—	1.0	
				. 0,5 0,8	185(19,0)	—	2.0	
				. 0,8 1,2	185(19,0)	—	3,0	
				. 1,2 4,0	185(19,0)	—	4,0	
				5,0 10,5	100(10,0)	—	10,0	
				1,0 4,5				
12		12		0,5 4,0	155(16,0)	—	14,0	
		12 2		0,5 4,0	220 (22,5)	—	3,0	
2		2		0,5 1,0	165(17,0)	—	16,0	
				. 1,0 10,5	165(17,0)	—	18,0	
		2 2			0,5 1.0	235-314 (24.0-32,0)	145(15,0)	5.0
					. 1.0 4,0	235-314 (24.0-32,0)	145(15,0)	6.0
		2			0,5 1,0	265 (27,0)	215(22,0)	3,0
					. 1,0 4,0	265 (27,0)	215(22,0)	4,0

					(/ 2)	(/ 2)	0 = 11, 6, %	
2		2		5.0 10.5	175 (18,0)	—	7,0	
				0.5 0.6	195 (20,0)	90 (9,0)	15,0	
				0.6 4.5	195 (20,0)	100(10,0)	15,0	
				4.5 10,5	185(19,0)	80 (8,0)	15.0	
		2			0.5 1,0	245 (25,0)	195 (20,0)	7,0
					1.0 4.0	245 (25,0)	195 (20,0)	7.0
					5.0 6,0	185(19,0)	80 (8.0)	12,0
6.0 10,5					185 (19,0)	80 (8.0)	15.0	
5		5		0.5 0,6	275 (28,0)	135(14,0)	15.0	
				0,6 4.5	275 (28,0)	145(15,0)	15.0	
				4,5 10,5	275 (28,0)	130 (13,0)	15,0	
		5			5.0 6.0	275 (28,0)	130(13,0)	12.0
					6.0 10,5	275 (28,0)	130 (13,0)	15.0

					(' / 2)	(/ ⁰² 2)	(' ' ') . %
				0.5 0,6 .	305 (31,0)	145(15,0)	15,0
				0.6 10,5 .	315(32,0)	155(16,0)	15,0
				5,0 10.5 .	315(32,0)	155(16,0)	15,0
				2.0 5.5 .	275 (28,0)	130(13,0)	15,0
1565		1565		0.5 2,0 .	335 (34,0)	160(16,5)	15,0
				2.0 6,0 .	335 (34,0)	170 (17,5)	15,0
				6,0 10.5 .	335 (34,0)	175(18,0)	15,0
		1565		3,5 10.5 .	335 (34,0)	175(18,0)	15,0
		1565 2		2,0 5,0 .	360 (36,5)	255 (26,0)	10,0
1580		1580		0.5 2,5 .	360 (36,5)	260 (26,5)	15
				2.5 6 .	380 (39,0)	280 (29,0)	12
				6 10.5 .	360 (36,5)	260 (26,5)	15
		1580 2		1,5 6,0 .	400 (41,0)	310 (32,0)	10

£

7

					(/ 2)	(/ 2)	0 = 11, 6, % 0.	
				0,5 5,0 .	145 (15,0)	—	20,0	
				0,5 10,5 .	145 (15,0)	—	15,0	
				0,5 0,6 .	195 (20,0)	—	18,0	
				0,6 3,0 .	195 (20,0)	—	20,0	
				0,3 5,0 .	195 (20,0)	—	18,0	
				0,5 10,5 .	175 (18,0)	—	16,0	
	1				0,5 5,0 .	295 (30,0)	—	10,0
					0,5 10,5 .	295 (30,0)	—	8,0
				-	0,5 10,5 .	175 (18,0)	—	14,0
				-	0,5 10,5 .	295 (30,0)	—	7,0
1		1		0,5 1,9 .	145—225 (15,0—23,0)	—	12,0	
				0,1,9 10,5 .	145—235 (15,0—24,0)	—	12,0	
		1			0,5 1,9 .	365 (37,0)	185(19,0)	15,0
					0,1,9 10,5 .	375 (38,0)	195(20,0)	15,0

21631—2019

					(/ 2)	(/ ^{0.2} 2)	/ ₀ = 11.3 ' 0. %	
1		1	-	5.0 10,5	355 (36,0)	185(19,0)	12,0	
16 . 16		16 , 16		5.0 10,5	145—235 (15,0—24,0)	—	10,0	
	-	16 . 16	-	0,5 1,5	440 (45,0)	290 (29,5)	13,0	
				. 1,5 6,0	440 (45,0)	290 (29,5)	11,0	
				. 6.0 10,5	440 (45,0)	290 (29,5)	10,0	
		16 . 16			1.5 3,0	475 (48,5)	360 (36,5)	10,0
					. 3,0 7,5	475 (48,5)	360 (36,5)	8,0
16		16		0,5 1,9	145—225 (15,0—23,0)	—	10,0	
				. 1.9 10,5	145—235 (15,0—24,0)	—	10,0	
		16			0.5 1,9	405(41,5)	270 (27,5)	13,0
					. 1,9 6,0	425 (43,5)	275 (28,0)	11,0
16		16	-	. 6,0 10,5	425 (43,5)	275 (28,0)	10,0	
				5.0 10,5	415(42,0)	255 (26,0)	10,0	

					-		
					(/ 2)	(/ 2)	$\rho_0 = 11,8, \%$
16	-	16		1,5 1,9	425 (43.5)	335 (34.0)	10,0
				. 1,9 7,5	455 (46.5)	345 (35.0)	8.0
16		16		0.5 1,9	130-225 (13,0-23,0)	—	10,0
				. 1,9 4,0	130-235 (13.0-24,0)	—	10,0
		16		0,5 1,9	365 (37,0)	230 (23,5)	13.0
				. 1,9 4,0	405(41,5)	270 (27.5)	13,0
95	-	95		0.5 10.5	245 (25.0)	—	10,0
		95 1		0.5 1,9	480 (49,0)	400 (41.0)	7.0
				. 1,9 6,0	490 (50,0)	410 (42,0)	7.0
				. 6.0 10.5	490 (50,0)	410 (42,0)	6,0
	95		5.0 10.5	490 (50,0)	410 (42,0)	6,0	
95-2 , 95-2 , 95-1 . , ,		95-2 , 95-2 , 95-1 . , ,		1.0 10.5	245 (25.0)	—	10,0
				0.8 4,0			

					(' / 2)	(/ ⁰² 2)	(' . ') . %
95-2 , 95-2 , 95-1 ,		95-2 , 95-1 ,	-	1.0 10,5	315(32,0)	—	10,0
		95-2		5,0 10,5	315(32,0)	—	10,0
		95-1 ,					
1915		1915		1.0 4,5	²⁴⁵ (25,0)	—	10
		1915	- 30—35	1,0 10,5	315(32,0)	195 (20,0)	10
		1915	- 2—4	1,0 10,5	275 (28,0)	165(17,0)	10
		1915	- 30—35	5.0 10,5	315(32,0)	195 (20,0)	10
		1915	- 2—4	5.0 10,5	265 (27,0)	165(17,0)	10
1 , 1 , 1		1 , 1 , 1		0.8 10,5	²⁴⁵ (25,0)	—	10,0
		1 , 1 , 1	-	0.8 10,5	335 (34,0)	—	12,0
		1 , 1 , 1		0.8 4,0			
		1, 1 , 1		5,0 10,5	335 (34,0)	—	12,0

1 : 7. 6. 5, . . . 1. 00.
 2 108 (11 / ²).
 1.0 4.0 147 (15.0 / ²) 196 (20.0 / ²).

8

			(/ ²)	ci02> (/ ²)	/o=11.3^, 3.%	
1		0.5 1.9 .	355 (36,0)	185(19,0)	15,0	
		. 1.9 10,5 .	355 (36,0)	195 (20,0)	15,0	
16		0,5 1,5 .	425 (43,5)	275 (28,0)	13,0	
		. 1,5 6,0 .	425 (43,5)	275 (28,0)	11,	
		. 6,0 10,5 .	425 (43,5)	275 (28,0)	10,0	
16		0,5 1.9 .	390 (40,0)	255 (26,0)	15,0	
		. 1.9 10.5 .	410 (42,0)	265 (27,0)	12,0	
16		0,5 1,9 .	350 (35,5)	220 (22,5)	13,0	
		. 1,9 4,0 .	390 (40,0)	255 (26,0)	13,0	
95		0,5 1,0 .	470 (48,0)	390 (40,0)	7,0	
		. 1.0 6,0 .	480 (49,0)	400 (41,0)	7,0	
		. 6,0 10.5 .	480 (49,0)	400 (41,0)	6.0	
		0.5 0.6 .	175(18,0)	—	18,0	
		. 0,6 3,0 .	175(18,0)	—	20,0	
		. 3,0 5,0 .	175(18,0)	—	18,0	
		. 5,0 10,5 .	155(16,0)	—	16,0	
			0,5 5,0 .	275 (28,0)	—	10,0
			. 5.0 10.5 .	275 (28,0)	—	8.0

5.8

2789 Ra = 1.25 .
 5.8.1) 20 ² 1 ²
 1200 ; 50 ² 1 ²
) ; 20 ² 1 ²
)
 5 ²;

) 0,05 1200 0,02 1200
 200*200 ; 4 ;
) ;
) 0,5 0,8
 :
 -1500 4000 ;
 -1000 4000 ;
) 1% ;
) « » () 50
 5 , 1% ;
)
 5.8.2 , , -
 5.9 -
 , , 2789 $R_a = 1,25$
 5.9.1 :
) 50 ² 1 ²
 5, , 80 ² 1 ² ;
) ; 40 ² 1 ² -
) 10 ² ;
) ;
) 0,05 8 -
 , 200*200 ; 5 ;
) ;
)
)
 0,5 0,8 , :
 - 1500 4000 ;
 -1000 4000 ;
) 0,2 , -
) 5 , ;
) 2% ;
) « » () 50 ,
 5 , 3% ;
) () ,
) 0,5 0,8 ;
) ;
) « »
) 5% ;
) () , ;
) 3% ;
) ,
 5.9.2 , , -
) 5.9.1, :
) 100 ² 1 ² ;
) 0,05 () ;
) 5% ;
) 5%

21631—2019

5.10 -
 , -
 . 2789 $R_a = 1,25$. -
 , , , , , -
 5 %
 5.11 5.8.1, 5.9.1 5.10.1 -
 , , 1. 16, 95.1915, , 2,
 , 5, , 1565 , 1580 ,
 5.8.1 5.9.1, .
 5.12 0,5 % — 1 % -
 6456 6 5009
 , -
 5.13 -
 5.14 , -
 5.15 , 1, 95, 95-1,
 95-2, 16, 1915, , 1, ,
 , 9.

			()	
			()	(300)
0,5 1,5	1200 .	7200 .	14	20
	. 1200 1600 .		16	20
. 1,5 4,0	1200 .	7200 .	18	30
	. 1200 1600 .		18	30
. 4,0 10,5	1200 .	7200 .	20	40
	. 1200 1600 .		22	40
0,8 2,0	. 1600 2000 .	4000 .	20	40
	. 1600 2000 .	. 4000 7200 .	23	45
. 2,0 10,5	. 1600 2000 .	4000 .	24	50
	. 1600 2000 .	. 4000 7200 .	25	50

5.15.1

10. (, 5.15) -

			()	
			()	(300)
0.3 3.0			14	14
. 3.0 6.0	1000	2000	18	18
. 6.0 10.5			23	23
0.5 1.0	. 1000 1200	4000	15	20
	. 1200 1600		16	25
	1200	. 4000 7000	20	25
	. 1200 1600		35	45
. 1.0 1.5	1000 1200	4000	20	25
	. 1200 1600		25	30
	1200	. 4000 7000	25	30
	. 1200 1600		30	45
. 1.5 3.0	1000 1200	4000	25	30
	. 1200 1600		25	35
	1200	. 4000 7000	25	30
	. 1200 1600		25	40
. 3.0 4.0	1000 1200	4000	25	40
	. 1200 1600		25	40
	1200	. 4000 7000	25	40
	. 1200 1600		30	45
. 4.0 6.0	1000 1200	4000	25	40
	. 1200 1600		30	40
	1200	. 4000 7000	25	40
	. 1200 1600		30	45
. 6.0 10.5	1000 1200	4000	25	40
	. 1200 1600		30	40
	1200	. 4000 7000	25	40
	. 1200 1600		30	45
. 0.8 10.5	. 1600 2000	4000	35	50
		. 4000 7000	50	55

6.6 (, 5, 16), -
 (), -
 1, 1, . -

12

		, %, ,	
5, 1565, 1580		10	5
7. 6, 5, 1, 00, , 12		5	—
2,		5	2
.		5	—
2		5	5
		5	—
16 . 16 , 16 . 16, 1915, 95 . 95-1, 95-2	1	10	5
16 , 16 , 16		10	5

1915 -

2—4 , — 30—35

6.7 , (, ,). -

6.8 . -

(). , , -

6.9 , , -

1% , .

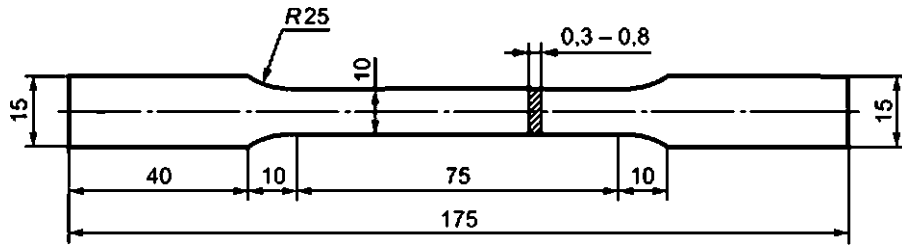
6.10 , . -

6.11 () , () . -

7

7.1 . -

						19300	-
	()					19300.	-
7.2							-
					115		25
					6507.		
					7502.		
					26877		427
	3749			5378.			
7.3							
	24231.					25086,	12697.1—
	12697.12			3221,		—	11739.1—
	11739.8,	11739.10—	11739.16,	11739.19—	11739.24		-
		7727.					
7.4						24047.	
					0.8	2,5	11701
			I	II		= 20	, I II.
	3,0	10,5	—	1497			
			(l_0)				
					$l_0 = 11,3^{\wedge}$,		(2)
F_q —							
							0,3
0,8					1.		



	1 —	()	
7.4.1		()	
7.5			
		()	
		26877	8026
	427.	()	
7.6			
0,5 %-			
24			

100 ²⁵/₃

1,84 / ^{1,34}/₃ 0,5

10 ³ -

10—15

7.7

8

8.1

30

8.2

1,0

1500

8.3

9.510.

14192

-

-

-

-

-

()

1

.1

1 , .

	600	800	900	1000	1200	1400	1425	1500	1600	1800	2000
0,3	0.473	0,596	0,670	0.715	—	—	—	—	—	—	—
0.4	0.646	0.825	0,928	1.001	1,168	—	—	—	—	—	—
0.5	0.818	1.054	1,185	1,288	1,511	1,762	1,793	1,887	2,013	—	—
0.6	0.981	1.260	1,417	1,545	1,854	2,142	2,180	2,295	2,447	—	—
0.7	1.153	1.489	1,675	1.831	2.198	2.543	2,588	2,724	2,905	—	—
0.8	1.308	1,696	1,907	2.117	2,524	2,923	2,975	3,131	3,339	3.704	4,114
0.9	1.480	1,925	2,164	2.404	2,868	3,324	3,383	3,560	3,797	4,218	4,686
1.0	1.635	2.120	2,383	2.647	3,160	3,664	3,729	3,925	4,185	4,681	5,200
1,2	1.980	2.578	2,989	3.219	3,846	4,465	4,544	4,783	5,100	5,659	6,286
1.5	2,453	3,208	3,607	4,006	4,774	5,506	5,604	5,898	6,290	7,048	7.829
1.6	2,625	3,437	3,865	4,292	5,117	5,906	6,011	6,327	6,747	7,562	8,400
1.8	2,969	3,895	4,380	4,864	5,804	6,707	6,826	7,184	7,662	8,591	9,543
1.9	3,142	4.125	4,638	5,151	6,147	7.108	7,234	7,613	8,119	9,105	10,114
2.0	3,314	4,354	4,895	5,437	6,456	7.488	7,621	8,021	8,554	9,594	10,657
2.5	4.131	5.442	6,119	6,796	8,105	9,430	9,598	10,101	10,772	12,089	13,428
3.0	4,949	6,530	7.343	8,155	9,788	11,332	11,534	12,139	12,945	14,533	16,143
3.5	5,810	7.676	8,631	9,586	11,470	13,314	13,551	14,262	15,209	17,079	18,971
4.0	6.670	8,822	9,919	11,016	13,136	15,296	15,568	16,385	17,474	19,625	21,800
4.5	7.531	9,968	11.207	12,447	14,853	17,298	17,606	18,530	19,761	22,197	24,657
5.0	8,349	11,056	12,431	13,806	16,553	19,280	19,624	20,653	22,025	24,744	27,486
5.5	9,240	12,232	13,750	15,267	18,308	21,320	21,699	22,835	24,350	27,354	30,381
6.0	10,104	13,323	14,976	16,629	19,943	23,226	23,638	24,876	26,526	29,801	33,098
6.5	10,967	14,472	16,267	18,063	21,663	25,232	25,680	27,024	28,817	32,376	35,959
7.0	11,831	15,610	17,558	19,496	23,367	27,217	27,701	29,151	31,085	34,926	38,791
7.5	12,694	16,769	18,849	20,930	25,088	29,223	29,742	31,299	33,375	37,502	41,652
8.0	13,515	17,860	20,076	22,292	26,739	31,148	31.702	33,361	35,574	39,975	44,398
8.5	14,378	19,009	21,367	23.725	28,460	33,154	33,743	35,510	37.865	42,550	47,259
9.0	15,242	20,157	22,658	25,159	30,164	35,140	35,764	37,636	40,133	45,100	50,091
9.5	16,105	21,306	23,949	26,592	31,884	37,145	37,805	39,784	42,424	47,676	52,951
10,0	16,926	22,397	25,175	27,954	33,553	39,111	39,806	41,890	44,668	50,226	55,783
10,5	17,789	23.545	26,467	29,388	35,274	41,117	41.847	44,038	46,959	52,802	58,644

.2

	1										
	600	800	900	1000	1200	1400	1425	1500	1600	1800	2000
0,3	0,482	0,619	0,696	0,758	—	—	—	—	—	—	—
0,4	0,654	0,848	0,953	1,030	1,202	—	—	—	—	—	—
0,5	0,826	1,077	1,211	1,316	1,545	1,802	1,834	1,930	2,058	—	—
0,6	0,990	1,283	1,433	1,574	1,889	2,182	2,221	2,338	2,493	—	—
0,7	1,162	1,512	1,700	1,860	2,232	2,583	2,629	2,767	2,950	—	—
0,8	1,325	1,719	1,932	2,146	2,541	2,963	3,016	3,174	3,385	3,755	4,171
0,9	1,498	1,948	2,190	2,432	2,885	3,364	3,423	3,603	3,842	4,270	4,743
1,0	1,653	2,154	2,422	2,690	3,194	3,704	3,770	3,968	4,231	4,733	5,257
1,2	1,997	2,612	2,937	3,262	3,881	4,505	4,585	4,825	5,146	5,710	6,343
1,5	2,496	3,277	3,684	4,092	4,842	5,606	5,706	6,005	6,404	7,099	7,886
1,6	2,668	3,506	3,942	4,378	5,186	5,966	6,072	6,391	6,816	7,613	8,457
1,8	3,012	3,941	4,431	4,922	5,838	6,767	6,888	7,249	7,730	8,642	9,600
1,9	3,185	4,170	4,689	5,208	6,182	7,168	7,295	7,678	8,188	9,157	10,171
2,0	3,357	4,399	4,947	5,494	6,525	7,528	7,662	8,064	8,600	9,645	10,714
2,5	4,200	5,522	6,209	6,896	8,208	9,490	9,659	10,166	10,841	12,140	13,486
3,0	5,044	6,645	7,472	8,298	9,856	11,452	11,656	12,267	13,082	14,584	16,200
3,5	5,887	7,768	8,734	9,700	11,539	13,414	13,653	14,369	15,324	17,130	19,028
4,0	6,731	8,891	9,996	11,102	13,188	15,336	15,609	16,428	17,519	19,677	21,857
4,5	7,574	10,013	11,259	12,504	14,870	17,338	17,647	18,572	19,807	22,249	24,714
5,0	8,400	11,113	12,496	13,878	16,587	19,321	19,664	20,696	22,071	24,795	27,543
5,5	9,292	12,289	13,814	15,310	18,343	21,361	21,740	22,878	24,396	27,405	30,438
6,0	10,121	13,381	15,041	16,658	19,994	23,266	23,679	24,919	26,572	29,852	33,155
6,5	10,984	14,529	16,332	18,091	21,715	25,272	25,721	27,067	28,863	32,428	36,016
7,0	11,848	15,678	17,623	19,525	23,401	27,257	27,741	29,194	31,130	34,978	38,848
7,5	12,711	16,826	18,914	20,959	25,122	29,263	29,783	31,342	33,421	37,554	41,709
8,0	13,532	17,917	20,140	22,335	26,744	31,188	31,742	33,404	35,620	40,026	44,455
8,5	14,395	19,066	21,431	23,768	28,495	33,194	33,784	35,553	37,911	42,602	47,316
9,0	15,259	20,214	22,722	25,202	30,198	35,180	35,805	37,679	40,179	45,152	50,148
9,5	16,122	21,363	24,014	26,635	31,919	37,185	37,846	39,827	42,469	47,727	53,009
10,0	16,943	22,454	25,240	27,983	33,588	39,151	39,846	41,933	44,714	50,277	55,841
10,5	17,806	23,603	26,531	29,416	35,309	41,157	41,888	44,081	47,005	52,853	58,701

	1										
	600	800	900	1000	1200	1400	1425	1500	1600	1800	2000
0.3	0.481	0,618	0,695	0.758	—	—	—	—	—	—	—
0.4	0.653	0.847	9,952	1.029	1,200	—	—	—	—	—	—
0.5	0.825	1,076	1,210	1,315	1,543	1,799	1,831	1,928	2,056	—	—
0.6	0.988	1,282	1,441	1,572	1,886	2,179	2,218	2,335	2,490	—	—
0.7	1,160	1,510	1,699	1,858	2,229	2,579	2,625	2,763	2,947	—	—
0.8	1,323	1,716	1,930	2,144	2,537	2,959	3,012	3,170	3,381	3,751	4,167
0.9	1,495	1,945	2,188	2,430	2,880	3,359	3,419	3,598	3,838	4,265	4,738
1.0	1.650	2,151	2,419	2.687	3,189	3,699	3,765	3,962	4,226	4.727	5,252
1.2	1.994	2,609	2,934	3,259	3,874	4.498	4.579	4,819	5,140	5,704	6,336
1.5	2,492	3.273	3,680	4,088	4,834	5,598	5,698	5.997	6,396	7,091	7.878
1.6	2,664	3,501	3,938	4,374	5.177	5,958	6,064	6,382	6,807	7,605	8,449
1.8	3,007	3,936	4,427	4,917	5,829	6,758	6,878	7.239	7,721	8,633	9,590
1.9	3,179	4.165	4,684	5,203	6,171	7,157	7,285	7,668	8,178	9,147	10,161
2.0	3,351	4,394	4,941	5,488	6,514	7,517	7,651	8,053	8,589	9,635	10,704
2.5	4,193	5,515	6,202	6,889	8,194	9,477	9,645	10,152	10,827	12,127	13,472
3.0	5,035	6,637	7,463	8,290	9,840	11,436	11,640	12,251	13,066	14,568	16,184
3.5	5.877	7.758	8,724	9,690	11,520	13,395	13,634	14,350	15,305	17,111	19,009
4.0	6,720	8,880	9,985	11,091	13,166	15,314	15,587	16,406	17,498	19,655	21,835
4.5	7,562	10,001	11,246	12,492	14,846	17,314	17,622	18,548	19,782	22,224	24,689
5.0	8,387	11,099	12,482	13,864	16,560	19,293	19,637	20,668	22,043	24,768	27,515
5.5	9,276	12,274	13,799	15,295	—	—	—	—	—	—	—
6.0	10,104	13,364	15,024	16,641	—	—	—	—	—	—	—
6.5	10,966	14,511	16,314	18,073	—	—	—	—	—	—	—
7.0	11,828	15,658	17,603	19,506	—	—	—	—	—	—	—
7.5	12,690	16,805	18,893	20,938	—	—	—	—	—	—	—
8.0	13,509	17,895	20,118	22,313	—	—	—	—	—	—	—
8.5	14,372	19,042	21,408	23,745	—	—	—	—	—	—	—
9.0	15,234	20,189	22,697	25,177	—	—	—	—	—	—	—
9.5	16,096	21,337	23,987	26,609	—	—	—	—	—	—	—
10,0	16,915	22,426	25,212	27,955	—	—	—	—	—	—	—
10,5	17,777	23,573	26,502	29,387	—	—	—	—	—	—	—

.4

	1										
	600	800	900	1000	1200	1400	1425	1500	1600	1800	2000
0,3	0,473	0,595	0,669	0,715	—	—	—	—	—	—	—
0,4	0,644	0,824	0,926	1,000	1,166	—	—	—	—	—	—
0,5	0,816	1,053	1,184	1,286	1,509	1,759	1,791	1,885	2,010	—	—
0,6	0,980	1,259	1,415	1,544	1,851	2,139	2,177	2,292	2,444	—	—
0,7	1,151	1,488	1,673	1,829	2,194	2,539	2,584	2,720	2,901	—	—
0,8	1,306	1,694	1,904	2,115	2,520	2,919	2,971	3,127	3,335	3,700	4,110
0,9	1,478	1,922	2,162	2,401	2,863	3,319	3,378	3,555	3,792	4,214	4,681
1,0	1,633	2,117	2,381	2,644	3,154	3,659	3,724	3,919	4,180	4,676	5,195
1,2	1,976	2,575	2,895	3,216	3,840	4,458	4,538	4,776	5,094	5,652	6,279
1,5	2,449	3,204	3,603	4,002	4,766	5,498	5,596	5,890	6,282	7,040	7,821
1,6	2,621	3,433	3,860	4,288	5,109	5,898	6,003	6,318	6,739	7,554	8,392
1,8	2,964	3,891	4,375	4,860	5,794	6,698	6,817	7,175	7,652	8,581	9,533
1,9	3,136	4,119	4,632	5,145	6,137	7,097	7,224	7,603	8,109	9,095	10,104
2,0	3,308	4,348	4,890	5,431	6,446	7,477	7,611	8,010	8,543	9,583	10,646
2,5	4,125	5,435	6,112	6,789	8,091	9,417	9,584	10,088	10,759	12,076	13,415
3,0	4,941	6,522	7,335	8,147	9,771	11,316	11,518	12,122	12,929	14,516	16,127
3,5	5,800	7,667	8,621	9,576	11,451	13,295	13,532	14,243	15,190	17,060	18,952
4,0	6,659	8,811	9,908	11,005	13,114	15,274	15,547	16,363	17,452	19,604	21,778
4,5	7,919	9,955	11,195	12,435	14,828	17,274	17,582	18,505	19,736	22,173	24,632
5,0	8,335	11,042	12,417	13,793	16,526	19,253	19,596	20,625	21,998	24,716	27,458
5,5	9,225	12,217	13,735	15,252	—	—	—	—	—	—	—
6,0	10,087	13,307	14,960	16,613	—	—	—	—	—	—	—
6,5	10,949	14,454	16,249	18,045	—	—	—	—	—	—	—
7,0	11,811	15,601	17,539	19,477	—	—	—	—	—	—	—
7,5	12,673	16,748	18,829	20,909	—	—	—	—	—	—	—
8,0	13,492	17,838	20,054	22,270	—	—	—	—	—	—	—
8,5	14,354	18,985	21,343	23,702	—	—	—	—	—	—	—
9,0	15,217	20,132	22,633	25,134	—	—	—	—	—	—	—
9,5	16,079	21,279	23,923	26,566	—	—	—	—	—	—	—
10,0	16,898	22,369	25,148	27,926	—	—	—	—	—	—	—
10,5	17,760	23,516	26,437	29,359	—	—	—	—	—	—	—

.5

	1 , , . 5.										
	600	800	900	1000	1200	1400	1425	1500	1600	1800	2000
5.0	8,605	11,457	12,882	14,307	17,171	20,021	20,378	21,446	22,871	27,721	28,571
5.5	9,499	12,634	14,202	15,769	18,928	22,063	22,454	23,630	25,198	28,333	31,468
6.0	10,363	13,783	15,493	17,203	20,648	24,068	24,496	25,778	27,488	30,908	34,328
6.5	11,226	14,931	16,784	18,636	22,369	26,074	26,537	27,926	29,779	33,484	37,189
7.0	12,090	16,080	18,075	20,070	24,090	28,080	28,578	30,075	32,070	36,060	40,050
7.5	12,953	17,228	19,366	21,503	25,810	30,085	30,620	32,223	34,360	38,635	42,910
8.0	13,817	18,377	20,657	22,937	27,531	32,091	32,661	34,371	36,651	41,211	45,771
8.5	14,680	19,525	21,948	24,370	29,252	34,097	34,702	36,519	38,942	43,787	48,632
9.0	15,544	20,674	23,239	25,804	30,972	36,102	36,744	38,667	41,232	46,362	51,492
9.5	16,407	21,822	24,530	27,237	32,693	38,108	38,785	40,816	43,523	48,938	54,353
10,0	17,271	22,971	25,821	28,671	34,414	40,114	40,826	42,964	45,814	51,514	57,214
10,5	18,135	24,120	27,112	30,105	36,134	42,119	42,868	45,112	48,104	54,089	60,074

()

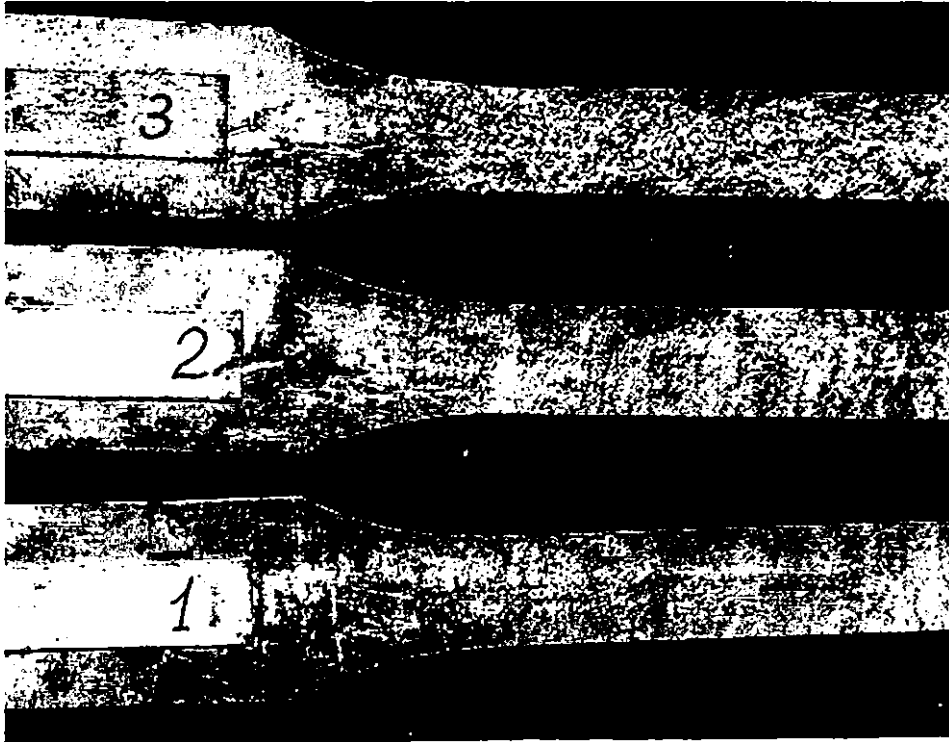
1

.1

	, / 3
	2,71
	2,71
1	2,71
,	2,73
2	2,69
	2,66
5	2,65
	2,65
1	2,80
1565	2,65
1580	2,67
16	2,77
95	2,85
1915	2,77
12	2,72

()

(1, 2, 3)



.1—

(1, 2, 3)

669.71-413:006.354+669.715-413:006.354

77.150.10

Технические параметры алюминиевых листов различных марок можно уточнить на сайте tver.mpstar.ru

6—2019/27

03.12.2019. 16.01.2020. 60*84
. . . 4.18. . . 3.55. 40 . . 51.

« , 117418 . - , . 31. . 2.