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INTERSTATE COUNCIL FOR STANDARDIZATION, METROLOGY AND CERTIFICATION  
(ISC)

**27180—  
2019**

**(ISO 10545-1:2014, NEQ)  
(ISO 10545-2:2018, NEQ)  
(ISO 10545-3:2018, NEQ)  
(ISO 10545-4:2014, NEQ)  
(ISO 10545-5:1996, NEQ)  
(ISO 10545-6:2010, NEQ)  
(ISO 10545-7:1996, NEQ)  
(ISO 10545-8:2014, NEQ)  
(ISO 10545-9:2013, NEQ)  
(ISO 10545-11:1994, NEQ)  
(ISO 10545-13:2016, NEQ)  
(ISO 10545-14:2015, NEQ)  
(ISO 10545-15:1995, NEQ)  
(ISO 10545-16:2010, NEQ)**



1.0 «  
 1.2 «  
 1  
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 2 144 «  
 3  
 ( 28 2019 . 55)  
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no MK ( 3166) 004—97	( 3166)004-9?	no
	AM BY KG RU TJ UZ	

4 17  
 2019 . 1018- 27180—2019  
 1 2020 .

- 5  
 :
- ISO10545-1:2014 « 1. » («Ceramic tiles — Part 1: Sampling and basis for acceptance». NEQ);
  - ISO 10545-2:2018 « 2. » («Ceramic tiles — Part 2: Determination of dimensions and surface quality». NEQ);
  - ISO 10545-3:2018 « 3. » («Ceramic tiles — Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density». NEQ);
  - ISO 10545-4:2014 « 4. » («Ceramic tiles — Part 4: Determination of modulus of rupture and breaking strength». NEQ);
  - ISO 10545-5:1996 « 5. » («Ceramic tiles — Part 5: Determination of impact resistance by measurement of coefficient of restitution». NEQ);
  - ISO 10545-6:2010 « 6. » («Ceramic tiles — Part 6: Determination of resistance to deep abrasion for unglazed tiles». NEQ);
  - ISO 10545-7:1996 « 7. » («Ceramic tiles — Part 7: Determination of resistance to surface abrasion for glazed tiles». NEQ);

- ISO ~~802464~~ « . 8. -
- » («Ceramic tiles — Part 8: Determination of linear thermal expansion». NEQ);
- \* ISO 10545-9:2013 « . 9. »
- («Ceramic tiles — Part 9: Determination of resistance to thermal shock». NEQ):
- ISO 10545 :1994 « . 11. -
- » («Ceramic tiles — Part 11. Determination of crazing resistance for glazed tiles. NEQ);
- \* ISO 10545-13:2016 « . 13. » («Ceramic tiles — Part 13: Determination of chemical resistance». NEQ);
- ISO 10545-14:2015 « . 14. -
- » («Ceramic tiles — Part 14: Determination of resistance to stains», NEQ);
- ISO 10545-15:1995 « . 15. -
- , » («Ceramic tiles — Part 15: Determination of lead and cadmium given off by glazed tiles», NEQ);
- ISO 10545-16:2010 « . 16. -
- » («Ceramic tiles — Part 16: Determination of small colour differences», NEQ)

6

27180-2001

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1	.....	1
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3	.....	2
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6	.....	11
7	.....	16
8	.....	20
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11	.....	28
12	.....	29
13	.....	31
14	.....	36
15	.....	46
16	.....	49
17	.....	51
18	.....	52
19	( ).....	53
	( ) .....	55
	( ) .....	56

Ceramic tiles. Test methods

— 2020—06—01

1

( )

2

:

61

166 ( 3599—76)

427

490

906

1129

2222

2768

2912

3118

3647

3749

90

3773

4159

6823

7502

8026

9285 ( 992—75. 995—75, 2466—73)

9416

13996

14791

\*

9138:1993,

9284:1992) «

52381—2005 (

8486-1:1996.

6344-2:1998.

	17299		
	18300'		
	20403		( 30
100 IRHD)	20490		
	23932		
	24104"		
	24363		
	27110		
	28117		

(www.easc.by)

8

**3**

13996.

3.1

3.2

3.3

3.4

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3.6

3.7

CIE (1976 L'a'b ". CIELAB):

3.8

£ :

CIE 15.2.

CIELAB ( 1\_ ' ' ' ),

3.9

cfz

cf. 0.75.

\*

55878—2013 «

\*\*

53228—2008 «

1.

3.10

4

4.1  
70 %.

4.2

4.3

4.4

4.5

(20 ±5)'

30 %

1.

1.

Re,

Re,.

2'

Re<sub>2</sub>

1—

				Re,	2	Re <sub>2</sub>	
	1)	10	0	2	1	2	5.2—5.6
21	30 40 50 60 70 80 90 100 1 2	30 40 50 60 70 80 90 100 1 2	1 1 2 2 2 3 4 4 4%	3 4 5 5 6 7 8 9 9%	3 4 5 6 7 8 9 10 5%	4 5 6 7 8 9 10 11 >5%	5.7
3*	3 5 10	3 5 10	0 0 0	2 2 2	1 1 1	2 2 2	6
4*	3 7	3 7	- )	-5>			7
4*	3 7	3 7	-5)	-5>			7
-	5	5	0	2&»	1»)	2@>	8
-	5	5	0	2	1	2	1

1

				Re,		Re <sub>2</sub>	
71	5	5	0	2	1	2	12
71	5	5	0	2	1	2	15
81	5 <sup>91</sup> 10	—	0	1	—	—	11
	5	5	0	2	1	2	10.1
	5	5	0	2	1	2	10.2
81	11 (8) <sup>01</sup>	—	—	—			9
	— )	—	—	—			14
	5	—	—	—			17
	5	—	—	—			13
	5	—	—	—			16
	5	—	—	—			5.2. 5.5
« »	5	—	—	—			5.2.4.4
	5	—	—	—			19
II	0.0004 <sup>2</sup>						
21	1 2,	30			1 2		
81			:	:	2.		
41			:	:	5.		
81					6.7.		
81							
71							
81							
81			0,04 <sup>2</sup>				
181	0.16 <sup>2</sup>						
III							

5

5.1

), ( ) , , ( - ) , , 4<sup>2</sup> , ,



	,	,	,		-
5.2	,				-
5.2.1	166,	7502,	427	8026	-
5.2.2	10	:			-
5.2.3	( )	0.1	5	(	-
	,				-
		1.0			-
50—60		; 30			-
		1.0			-
5.2.4					-
5.2.4.1		40			-
					-
	20				-
5.2.4.2		( )		( ,	-
	)	10 (20 40	)		-
5.2.4.3					-
					-
5.2.4.4		« »			-
	,	,			-
5.3				(	-
	)				-
5.3.1					-
		( )			-
5.3.2	10				-
5.3.3				15	-
				30	-
					-
		0.1			-
			0.1		-

5.3.4

40

5.4

5.4.1

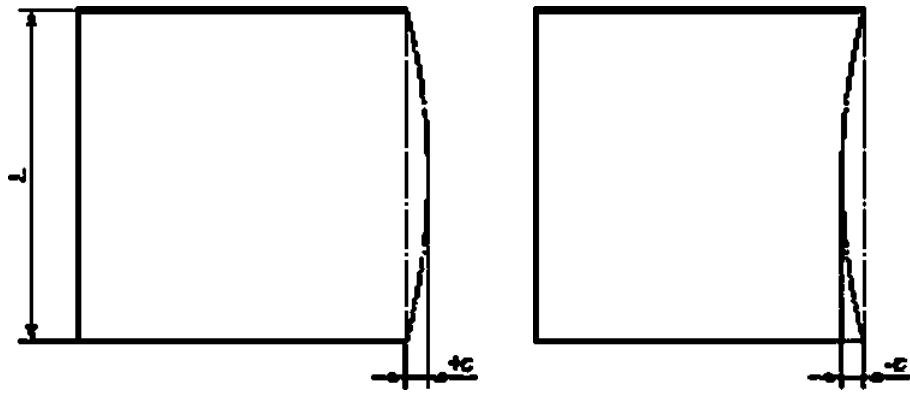
1.

. %,

= ^100.

(1)

L—



1—

5.4.2

5.4.2.1

2

9416.

8026

5.4.2.2

)

(

)

0.1

5.4.3

10

5.4.4

(5.4.2.1)

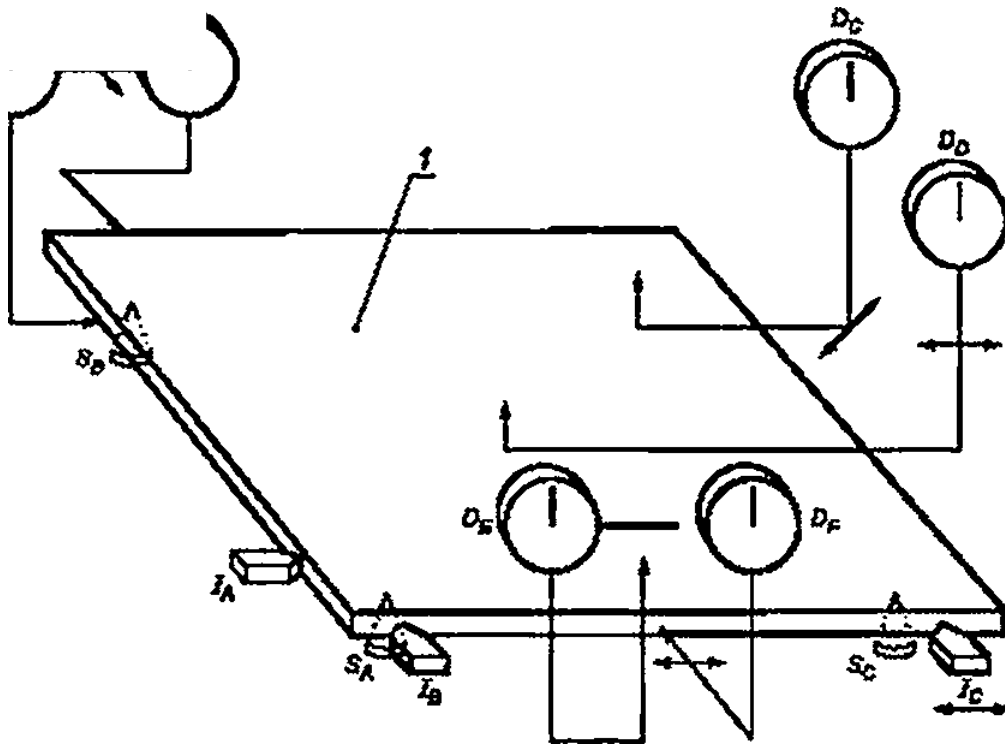
S^A, S\_{ij}, S\_c

I . I\_s . I

5

( . 2).

(5.4.2.2)



$S_j, S_g, S_c -$

$. . . tg. / -$  , .  $D&$  . , Og.  $O_F -$  /  
 : - - - / - - - .0 - .1 - /  
 2 -

0.1

0.1

5.5

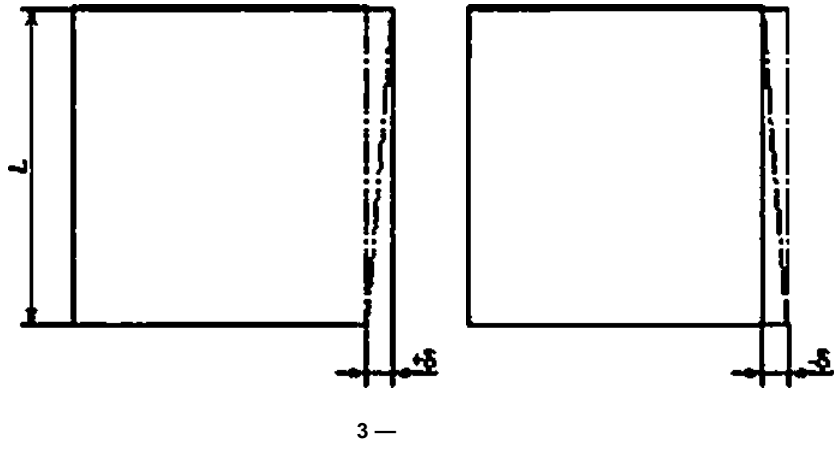
5.5.1

( ) .

( . 3). , %.

$$= \frac{\epsilon}{100}, \quad (2)$$

L—



5.5.2  
5.5.2.1

2

$D_A$

3749

5.5.2.2

0.1

5.5.3

10

5.5.4

<5.5.2.1 >

$S^A, S_e, S_c$

/ . 1 . 1

5

( . 2).

(5.5.2.2)

5

0.1

)

0.1 ;

)

0.1

7502.

5.6

5.6.1

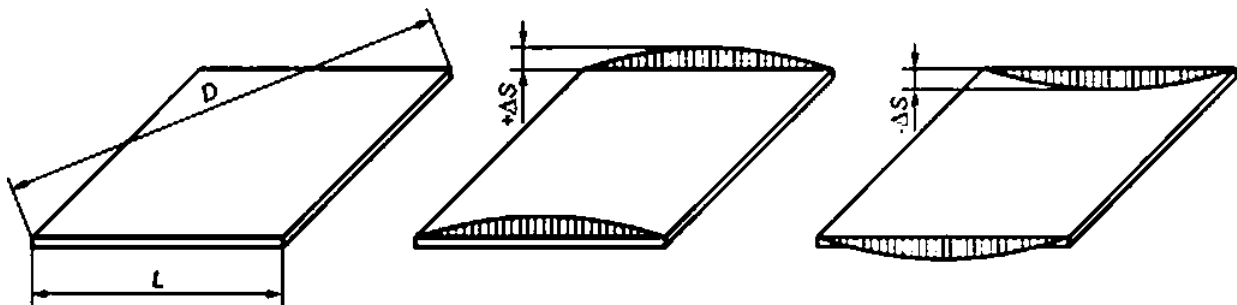
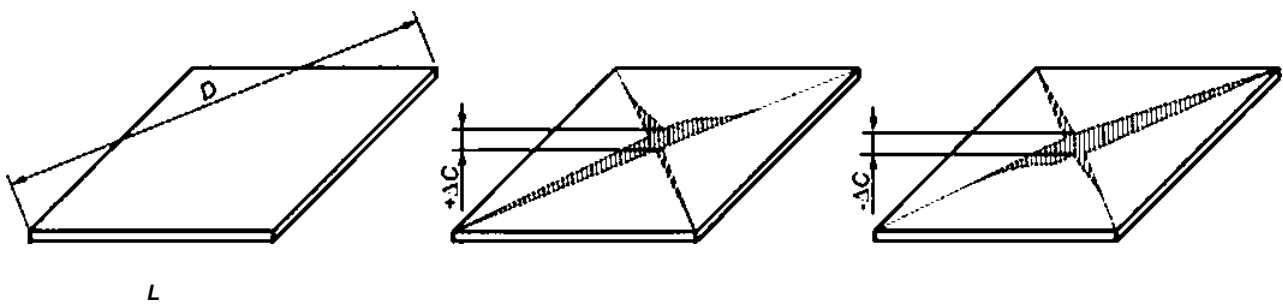
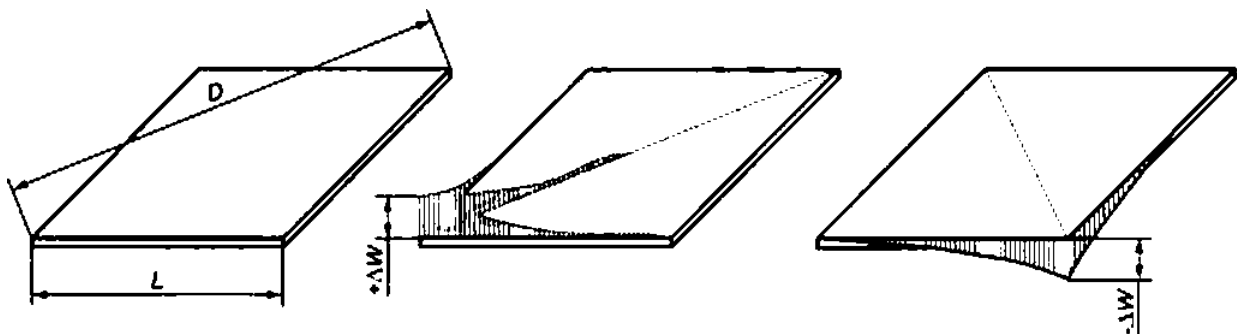


Рисунок 5 — Выпуклость/вогнутость граней



5.6.2

5.6.2.1

40 40

2

)

8026

9416.

5.6.2.16).

$S_A, S_{fi}, S_c$

5

)

5.4.2.1.

10

5.6.2.2

40

)

8026

9416.

)

5.6.3

10

5.6.4

5.6.4.1

40

(5.4.2.1)

(5.4.2.2J.

$S_A, S_B, S_c$

10

$D_e, D_c$   
 $D_o, D_e, D_c$

10

( . 2).

$D_o$

5.6.4.2

/

$D_e$

$D_c$

40

/

0.1

)

5.6.4.1.

(5.6.2.2 )]

( (5.6.2.26)]

5.6.5

— »

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• / ;

- / ;

/

5.7

5.7.1

— 13996.

5.7.2

5.7.2.1

6000 6500 .

5.7.2.2

1-

5.7.2.3

5.7.3

1 2 , 30

5.7.4

( — 45 ) 1

300

5.7.5

6

6.1

6.2

6.3

6.3.1

(110 ± 5) \*

6.3.2

0.01 %.

24104.

6.3.3

6.3.4

6.3.5

6.3.6

6.3.7

6.3.8

(10 ± 1)

30

6.4

6.4.1

1.

50

6.4.2

50 100

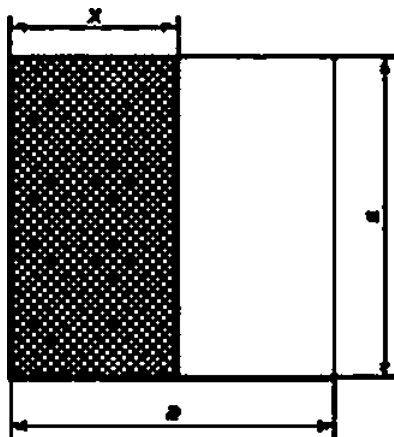
50

6.4.3

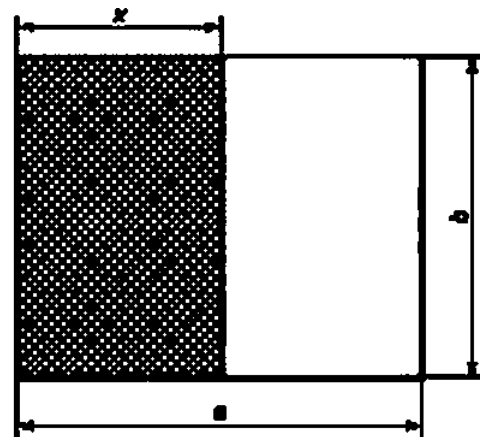
7—12

2.

6.4.1



) ( £20< » >2)

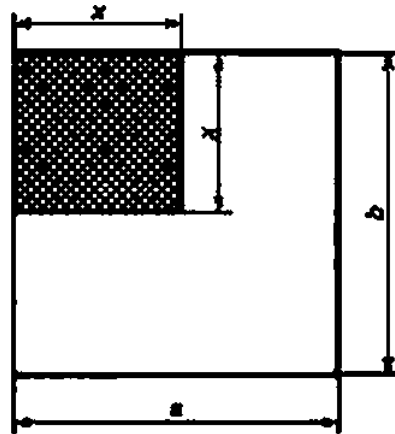


)

7—

400 ²

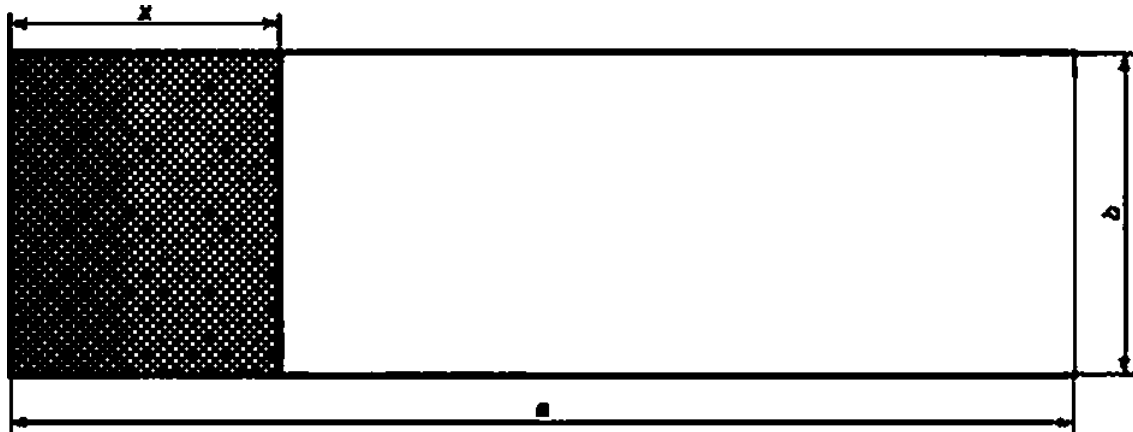




$a = 20 - 40 \text{ см}$   $b = 20 - 40 \text{ см}$   $x = 20 \text{ см}$

8 —

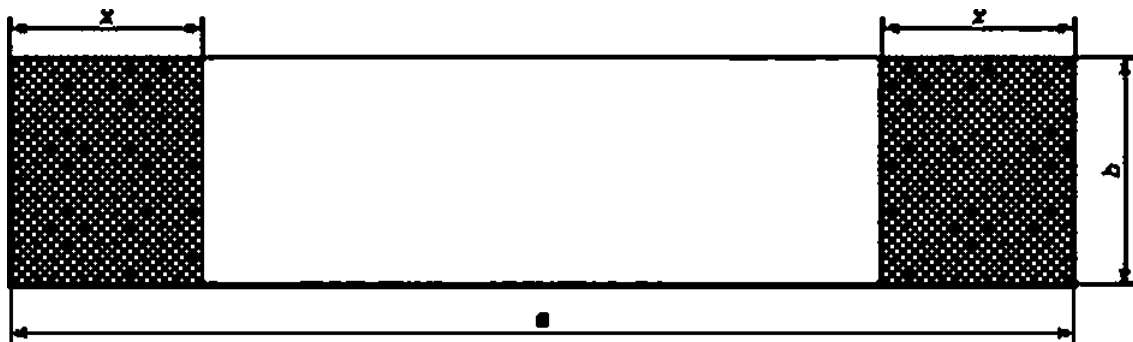
400 - 1600 <sup>2</sup>



• «100 «;0^20 "20

9 —

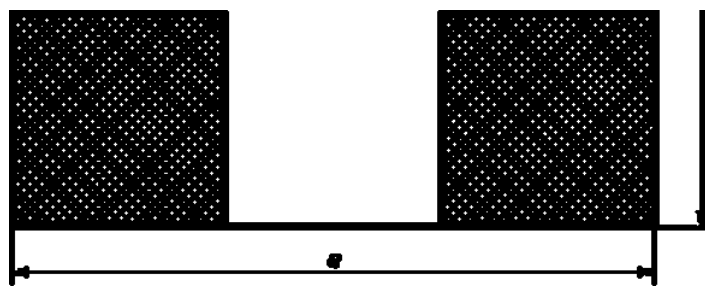
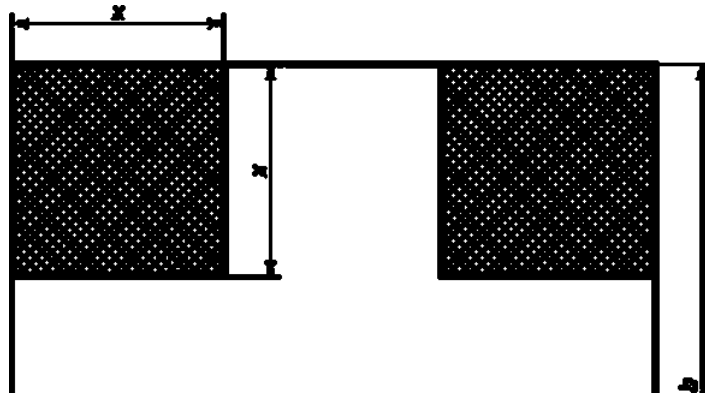
400 - 3600 <sup>2</sup>



• 100 ; 5:20 »; =2

10 —

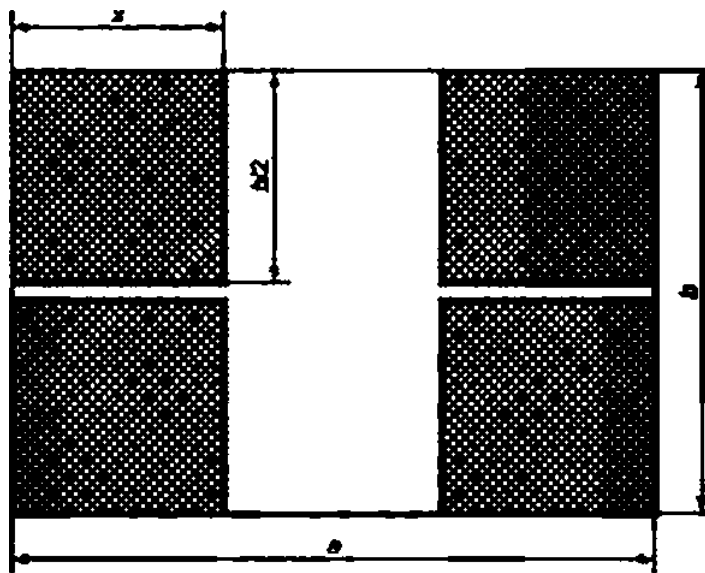
2 400 <sup>2</sup>



4 40  $b_i < 40$  » at

11 —

1600 <sup>2</sup>



• 40 : 20 £ 40 • 20

12 —

1600 <sup>2</sup>

2—

S. 2				
SS400	7	10	1	10
400 <SS 1600 ( b > 20 )	8	5	1	5
400<SS3600 ( < 100 . \$ 20 )	9	5	1	5
400<S\$3600 ( 2 100 . \$ 20 )	10	5	2	10
S > 3600 ( 2 100 , 20 )	11	3	2	6
S > 1600 ( 40 . b 40 )	11	3	4	12
S > 1600 ( 2 40 . 20 S b \$ 40 )	12	3	4	12

6.5

(11015) ' (6.3.1) \*  
 0.1 % 20  
 (6.3.5)  
 8 ( )  
 6.5.1  
 6.5.1.1 (6.3.6).  
 5 5 1  
 4 ±15  
 40 15 - 20 "  
 3.

3—

50 100 .	0.02
. 100 500 .	0.05
. 500 1000 .	0J5
. 1000 3000 .	0.50
. 3000	1.00

6.5.1.2

30 (10 ± 1)  
5  
15  
3.

6.6

1 3 1  
0.3 % ( )  
 $E_{(t, v)}$ , %.

$$E_{(b, v)} = \frac{m_{2(b, v)} - m_1}{m_1} \cdot 100, \quad (3)$$

/ ?! —  
 $m_{2v}$  —  
 $m_{2h}$  —

7

7.1

7.2

7.3

7.3.1 (110 ± 5) "

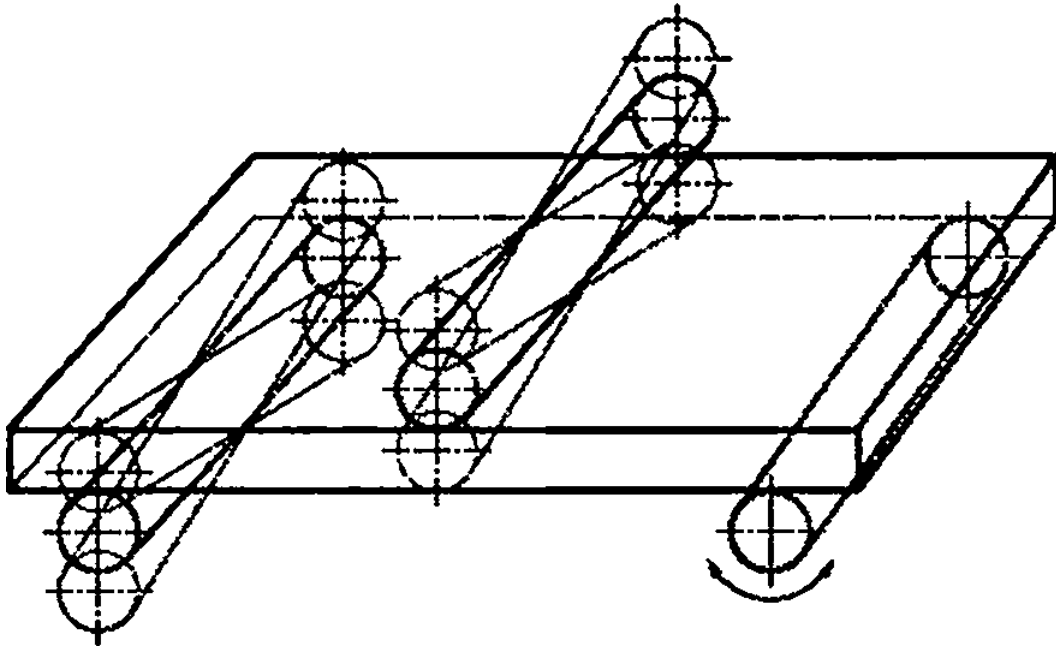
7.3.2 2 %.

7.3.3 ( )  
(50 ± 5) IRHD 20403. ( 13).

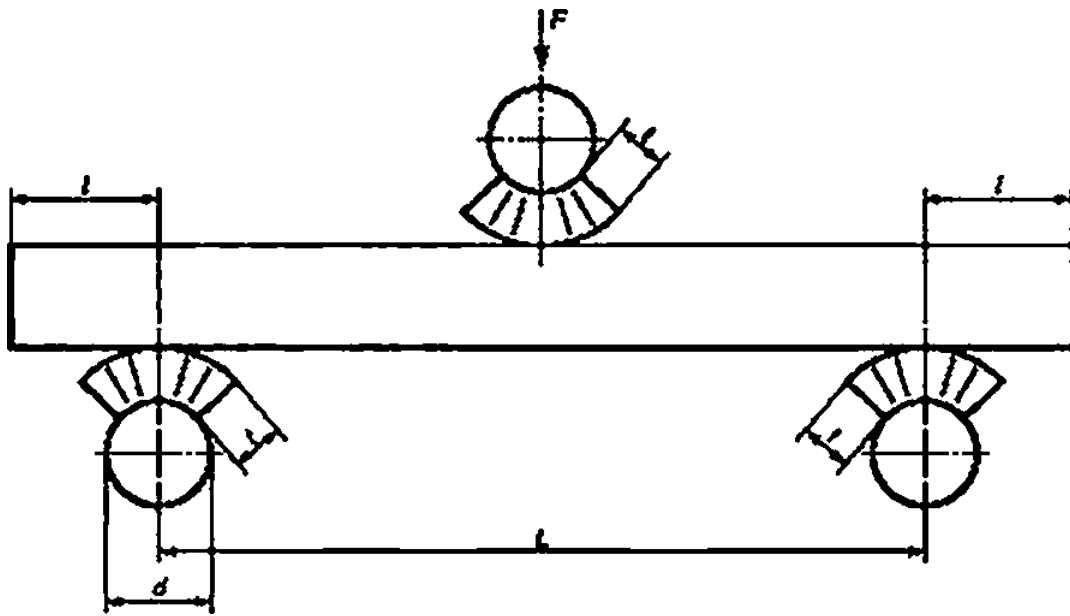
7.3.4 4. F.

( 14). 4.

\* IRHD — International rubber hardness degree —



13—



14—

( )

4—  
( . 14)

$L$	$d$	$l$	$1$
Li 95	$(5-20)\pm 1$	$5\pm 1$	10
48SK95		$2.5\pm 0.5$	5
18SK48		$1\pm 0,2$	2

7.4

8

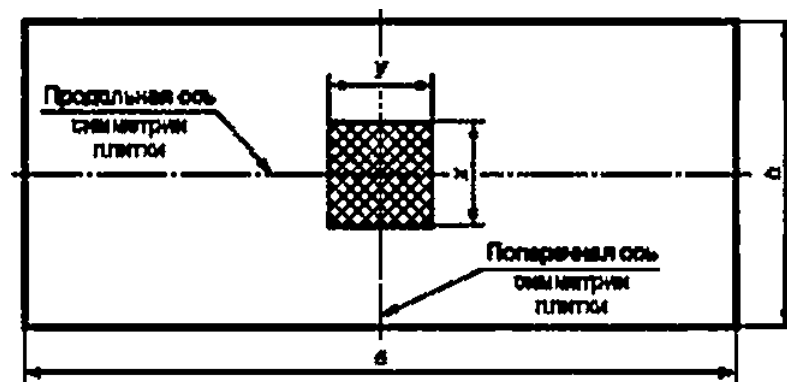
15 16.

( . )

5.

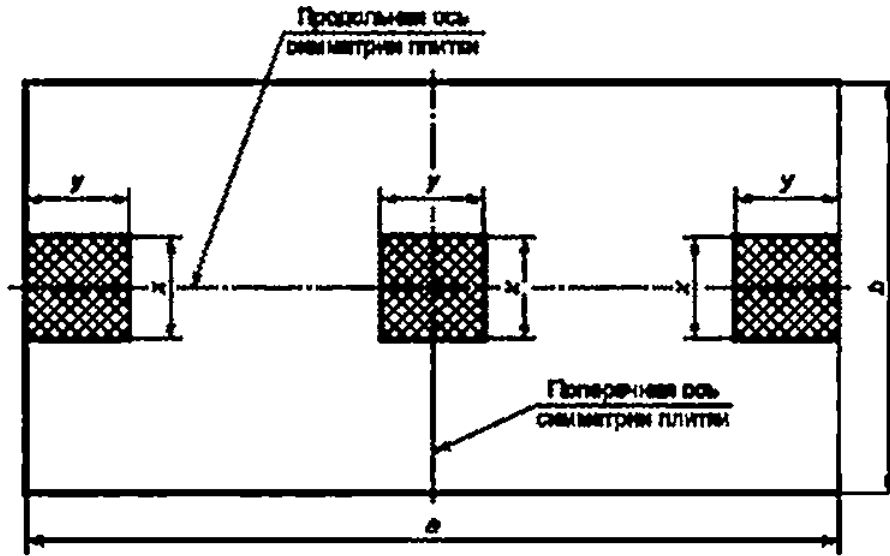
5 —

S. 2			
7.5			
SS400	7	1	7
400<SS3600	7	1	7
S>3600	3	1	3
7,5			
SS400	7	1	7
400<SS3600	7	1	7
S>3600	3	3	9



15 —

400 3600 2



$a, b$  — длина и ширина плитки,  $x, y$  — длина и ширина вырезаемого образца

16 —

3600<sup>2</sup>

7.5

7.5.1

(110 ± 5)'

0,1 %

20

3

7.5.2

4 ( 14).

7.5.3

7.5.4

7.5.5

(1,010.2) / ( 2 - ).  
(5). F

7.6

1/3

3600<sup>2</sup>,

7.5

3600<sup>2</sup>

3600<sup>2</sup>

7,5

- 10
- 14
- 7.5 ;
- 7.5

$$\frac{3600}{3600} \cdot \frac{3600}{3600}$$

S.

$$S = \frac{F \cdot L}{b}$$

- F— ;
  - L— ( 14). ;
  - b—
- R. ( / <sup>2</sup>).

$$R = \frac{3FL}{2bh^2} = 2h^2 \cdot \quad (5)$$

- F— ;
- L— ( 14). ;
- ;
- h—

8

8.1

8.2

8.2.1

8.2.2

8.2.2.1

8.2.2.2

8.2.2.3

8.2.2.4

( )

8.2.2.5

0.06

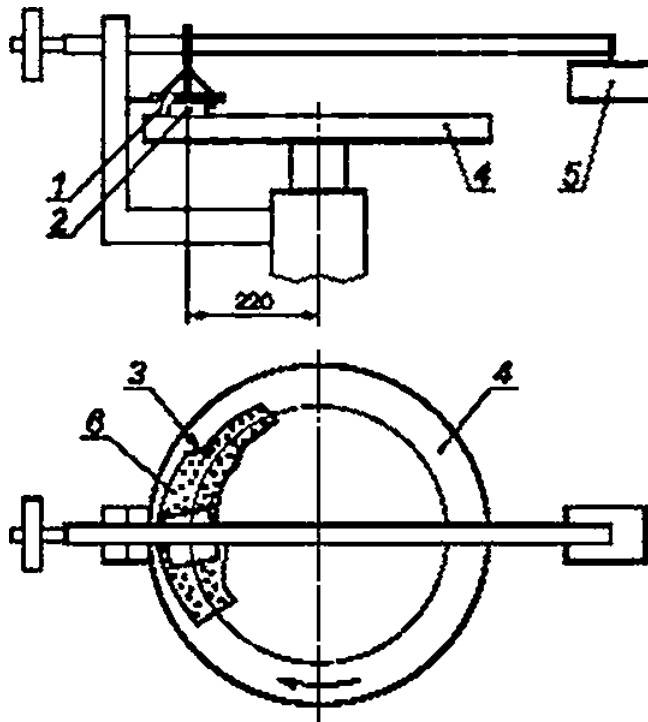
(3 ± 1)

8.2.3



(70 ± 1)

(50 ± 1)



t— ; 2— ; 3— . 4—  
5— , —

17—

(110 ± 5)

0.1% \*

20

0.1 2.

8.2.4

( )

( ) .

0.06

0.4 1 2

30

90 \*

90°

3%

12

8.2.5

$Q / \text{с}^3,$

$$Q = \frac{3m_k}{S} \tag{6}$$

$$Q = \frac{m_{12}}{S} \tag{7}$$

—  
 $m_{12}$  —  
 $S$  —  
 $3$  —  
 12  
 12  
 0,01 /  $\text{с}^2$ .

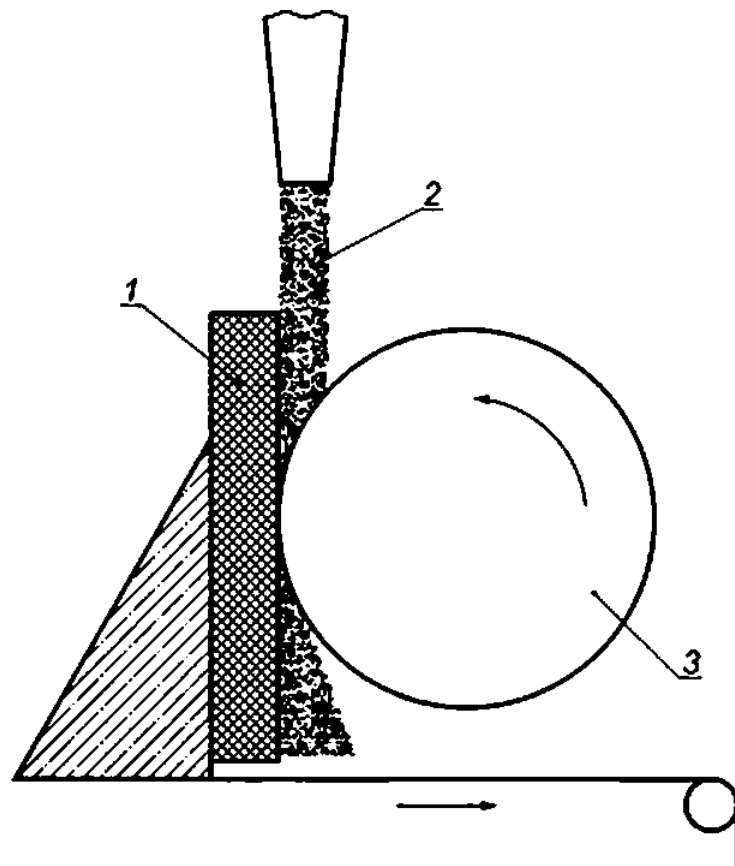
8.3

8.3.1

8.3.2

8.3.2.1

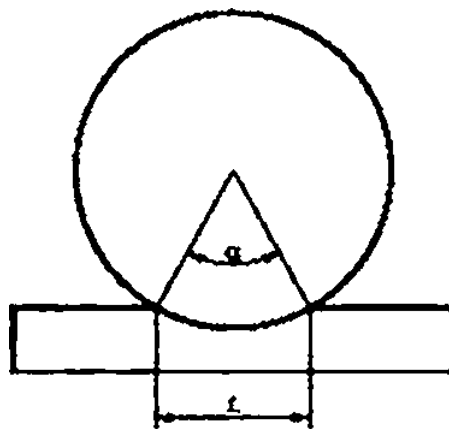
( . . . 18),



1 — керамическая плитка; 2 — абразивный материал; 3 — стальной диск

18 —

	(200,0 ± 0.2)	(10,0 ± 0,1)		-
75 /				
	(8.3.2.3)	150 (24,0 ± 0.5)		0.5 % -
8.3.2.2	166.			
8.3.2.3	: 16	3647	(1,7210,05) / <sup>3</sup>	24 .
25 (	).			
8.3.3				
			8.2.3.	
8.3.4				
8.3.4.1				
		(100 ± 10) 100		
8.3.4.2	150			
8.3.5			V. <sup>3</sup> ,	-
		L ( . 19),		
				<8>
		sin(0.5u) = 4:		(9)
h —				
d —				
L —				
	L	0.5		L V
6.				



6—

L

1.	V. <sup>3</sup>	L.	V. <sup>3</sup>	L.	V. <sup>3</sup>	L.	V. <sup>3</sup>	L.	V. <sup>3</sup>
20.0	67	30.0	227	40.0	540	50.0	1062	60.0	1851
20.5	72	30,5	238	40.5	561	50,5	1094	60.5	1899
21.0	77	31.0	250	41,0	582	51.0	1128	61.0	1947
21.5	83	31,5	262	41,5	603	51,5	1162	61,5	1996
22,0	89	32.0	275	42,0	626	52.0	1196	62.0	2046
22.5	95	32.5	288	42.5	649	52.5	1232	62.5	2097
23,0	102	33,0	302	43,0	672	53.0	1268	63.0	2149
23.5	109	33.5	316	43,5	696	53.5	1305	63.5	2202
24.0	116	34.0	330	44.0	720	54.0	1342	64.0	2256
24.5	123	34.5	345	44.5	746	54.5	1380	64.5	2310
25,0	131	35,0	361	45,0	771	55.0	1419	65.0	2365
25.5	139	35.5	376	45.5	798	55,5	1459	65.5	2422
26.0	147	36.0	393	46.0	824	56.0	1499	66.0	2479
26.5	156	36.5	409	46.5	852	56.5	1541	66.5	2596
27.0	165	37.0	427	47.0	880	57.0	1583	67,0	2656
27.5	174	37,5	444	47.5	909	57,5	1625	67,5	2717
28.0	184	38.0	462	48.0	938	58.0	1689	68.0	2717
28.5	194	38.5	481	48.5	968	58.5	1713	68.5	2779
29.0	205	39.0	500	49.0	999	59.0	1758	69.0	2842
29.5	215	39.5	520	49.5	1030	59.5	1804	69.5	2906

## 9

9.1

9.2

9.3

9.3.1

9.3.2

0.01 ).

9.3.3

9.3.4

9.3.5

( )).

9.3.6

(110 ± 5) .

0.1 % (

1 <sup>3</sup>.

0.63 0,70 .

16 3647

(1.72 ± 0.05) / <sup>3</sup> 24 . 25

1,2.3. 5 .

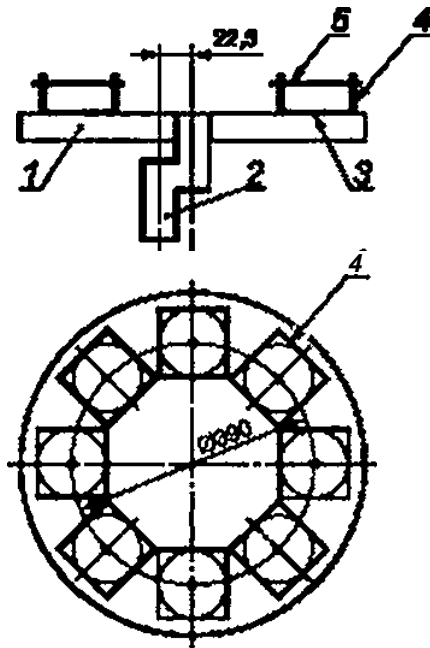
9.3.7

20.

(300 ± 1) /

22,5

54 2



1 — ; 2 — . 3 — . 4 — ; 5 —  
20 —

9.4

11

1600 2

(10011)

8.2.3.

9.5

175

1 — 8.7 (5%);

2 — 43.8 (25 %);  
 - 3 — 52.5 (30 %);  
 \* 5 — 70.0 (40 %);  
 16 ( 24 25 ) — 3.0 .  
 \* — 20<sup>3</sup>.

1500,1800. 2100, 6000 12 000

150. 600, 750.

(110 ± 5) ' .

30

300

7).

2

9.6

7.

7

( , )	
150	1
600	2
750; 1500; 1800	3
2100; 6000; 12 000	4
. 12 000 <sup>1</sup> »	5
<sup>1</sup> »	15.

## 10

10.1

10.1.1

10.1.2

15 150X.

10.1.3

10.1.3.1

150 X

±5 X.

10.1.3.2

(15 ± 5) X.

10.1.3.3

( )

10.1.3.4

10.1.3.5

( ).

10.1.4

200

10000

10.1.5

(

300

25

30

( , ).

(150 ± 5) \*

30

(15 ± 5) '

10

10

10.1.6

10.2

10.2.1

10.2.2

15 ' 125 \* ( 150 ' ).

10.2.3

10.2.3.1

(125 ± 5) \* (15015) .

10.2.3.2

(15 ± 5) °C.

10.2.3.3

( )

10.2.3.4

10.2.3.5

( ).

10.2.4

100

10.2.5

(

300

25

30

( , ).

(125 ± 5) \*

30

(150 ± 5) °C.

(15 ± 5)

10.2.6

11

11.1

11.2

15 —20 \*

15 — 20

11.3

11.3.1

15 \* 20 \*

11.3.2

11.3.3

15 20 \*

11.3.4

11.4

2. 7—12.

1

11.5

48

20

50 %

(2,0 ± 0.2)

15 20 :

(1.0 ± 0.1)

15 20

15'



. . . ) ( , , , -

**12**

12.1

12.2

12.3

1 - 100 / ³, 100  
 3773 1 ³ ;  
 2 — 20 / ³, 0,25 ³  
 « » 1 ³  
 13 %;

\* :  
 ) (L):  
 Nv 3 — 3 % ( ), 30 ³ HCl 3118  
 1,19 / ³ 970 ³ ;  
 N9 4 — 100 / ³, 100 -  
 908 1 ³ ;  
 5 — ( ) 30 / ³, 30  
 9285 1 ³ ;  
 ) ( ):  
 6 — 18 % ( ), 180 ³ HCl 3118  
 1,19 / ³ 820 ³ ;  
 N9 7 — 5 % ( ), 5 ³  
 490 995 ³ ;  
 N9 8 — ( ) 100 / ³, 100  
 9285 1 ³ .

12.4

12.4.1

(110 ± 5)'

12.4.2

).

12.4.3

50 ( ) 30 50 , -  
 28117, , ,

12.4.4

14791.

12.4.5

2788. 2222. 17299 18300.

12.4.6

23932.

12.4.7

( ) .

12.4.8

12.4.9

12.5

12.5.1

\*

12.5.2

\*

500

12.5.3

1000

12.6

12.6.1

1—8.

25

1.2.4.  
3. 5—8.

24  
(96 ± 1)

\*

10 \*

(110 ± 5) \* 30

12.6.2

(12.4.3)

1—8 (20 ± 1)

No 1.2.4.  
3, 5—8

24  
(96 ± 1)

(48 ± 1)

(110 ± 5)

30

12.7

12.7.1

25 30

( 8).

8

1.2	UA	UB	UC
3—5	ULA	ULB	ULC
6—8	UHA	UHB	UHC

12.7.2

12.7.2.1

».

12.7.2.2

25 30

( 300 ).

12.7.2.3

12.7.2.4

#5

(350 ± 100)

9.

9

1.2	GA	GB	GC
3—5	GLA	GLB	GLC
6—8	GHA	GHB	GHC

10.

10

1.2	GA(V)	GB(V)	GC(V)
3—5	GLA(V)	GLB(V)	GLC(V)
6—8	GHA(V)	GHB(V)	GHC(V)

13

13.1

8

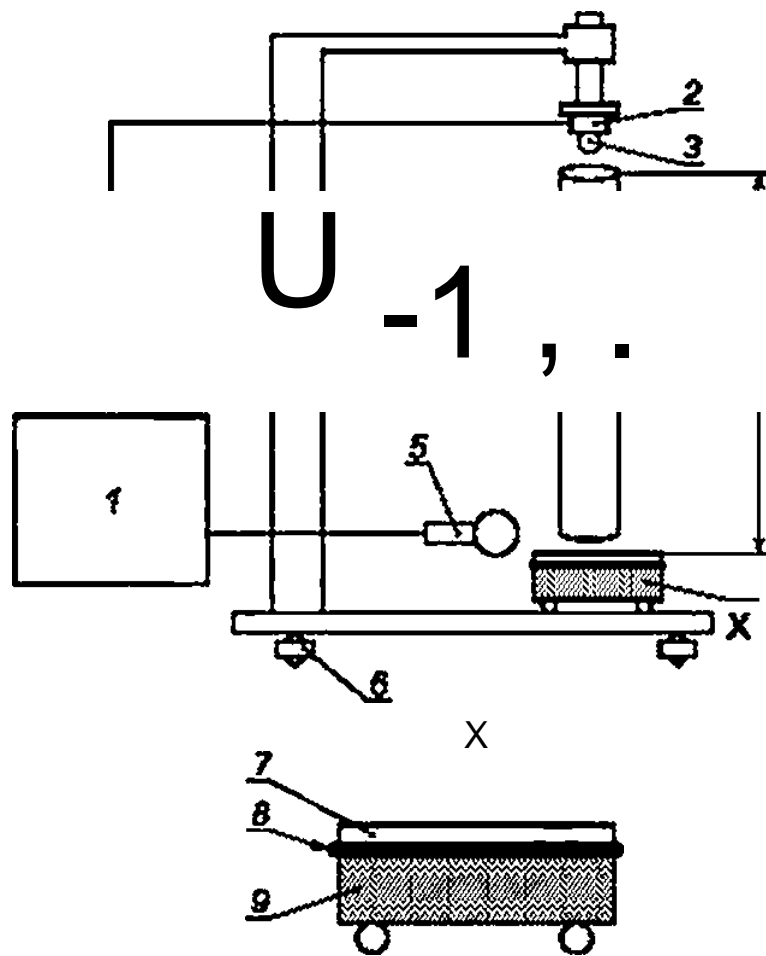
13.2

13.3

(19.00 ± 0.05)  
( 21),

21

( ) ,



J—  
5— ; —

.2— ; 8— ; 4—  
; 7— ; —  
9—

21—

13.4

13.4.1

700

70

13.4.2

700 50

8

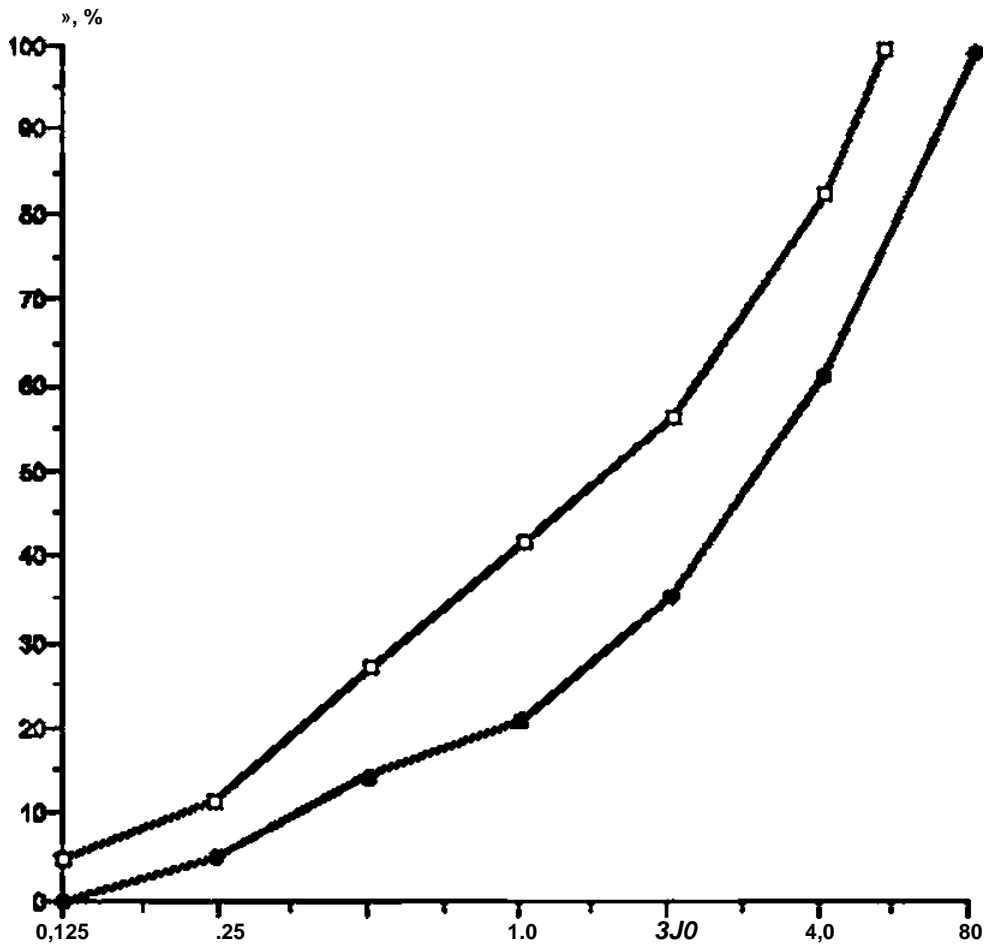
4.5—5.5

0 8

22.

0.125

500 / 3.



22 —

0 8

0.5.

90

50 .

48

(50 ± 15) %.

6

(23 ± 2) °C

(20 ± 2) °C

21

(23 ± 2) °C

(50 ± 5) %.

0.5

1.5

3

4

13.8.

24 (23 ± 2) °C

(50 ± 5) %.

13.4.3

5.5 (

)

13.4.4

13.4.2,

(13.4.3) 2

1.5

3 (23 ± 2) °C 7070 (5015) %.

70 70

13.5

( 21)

1 ±1

13.6

$$= 1. \tag{10}$$

v — , / .

$$v = \sqrt{2gh_2}. \tag{11}$$

— , 9.81 / <sup>2</sup>;

$h_2$  — , ;

— , / .

$$u = j2g\dot{l} \tag{12}$$

1—

$$= \sqrt{\frac{h_2}{h_1}} \tag{13}$$

:

$$h_2^{BU_0 t + \dots} \tag{14}$$

o—

( $\theta_0 = 0$ );

t—

$$t-T/2. \tag{15}$$

—

$$h_2 = 122,6 \text{ }^2. \tag{16}$$

13.7

(8,0 ± 0.5)

Bia 13996 (

0.5 %).

(72.5 ± 1.5)

13.5.  
0,8510,01.

$h_2$

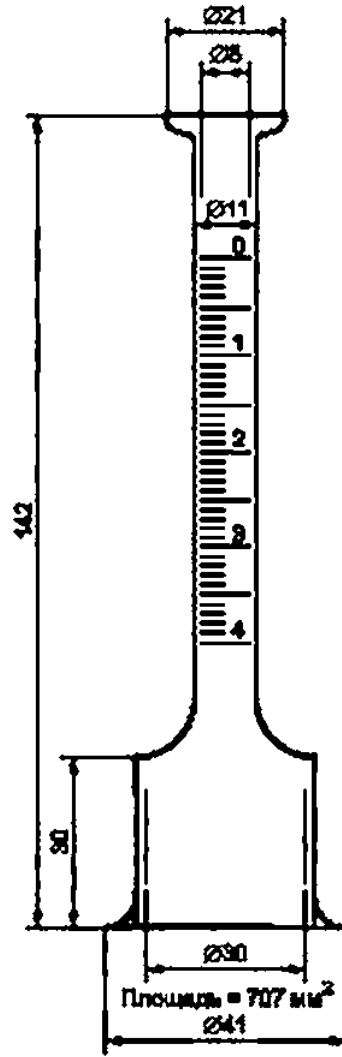
13.8

( )

( 23)

1.2.3 4

4



23 —

14

14.1

14.2

14.2.1

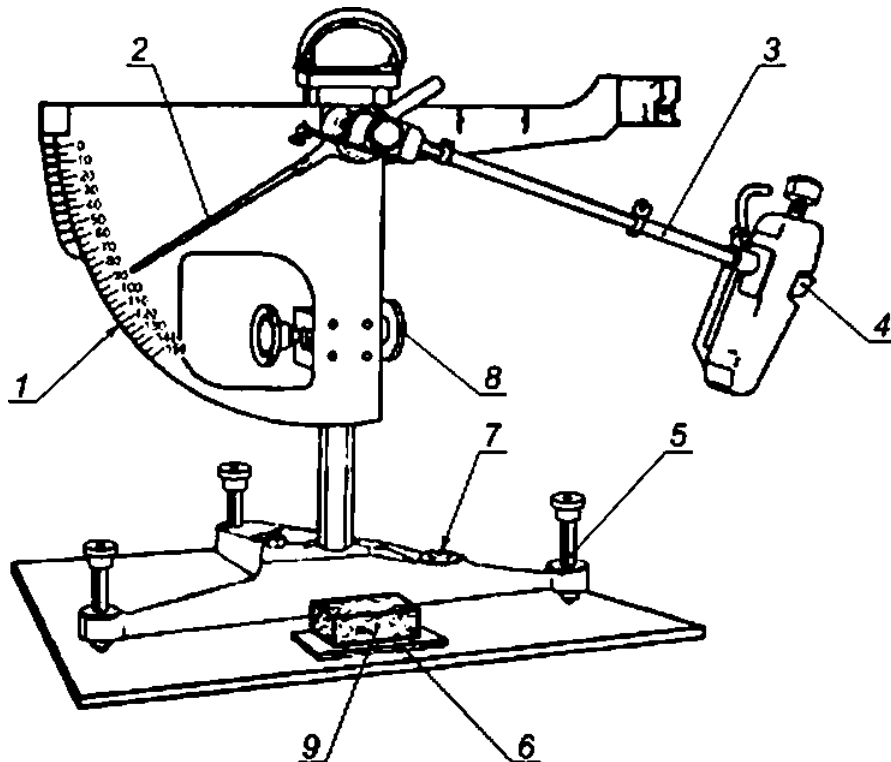
14.2.2

14.2.2.1

24.



(510 ± 1)



? — ; 2 — ; 3 — ; 4 — ; 5 — ; 6 —  
7 — ; 3 — ; 9 — 136 « 66

24 —

(125 ± 1)  
25;

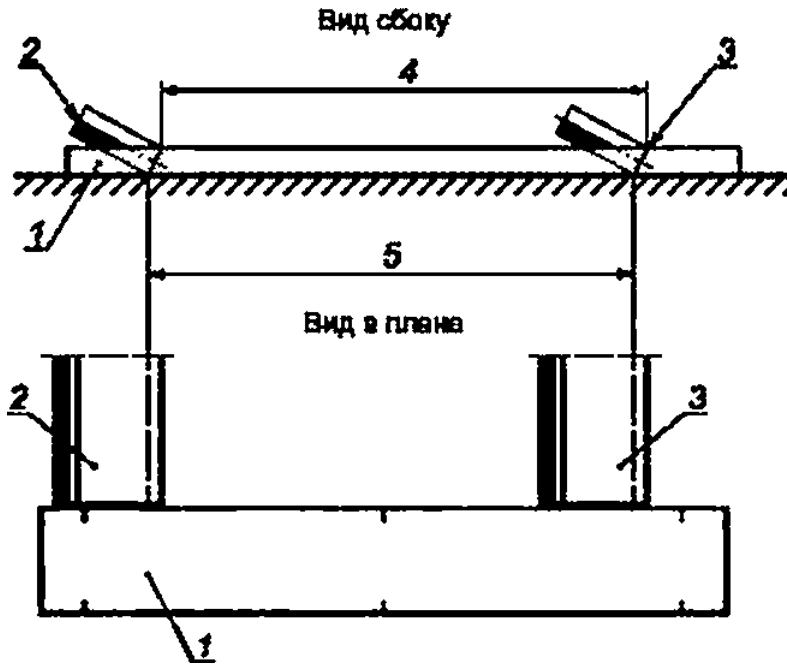
300

85

(10 ± 1)

126

0 100



1— . 2— : 3— »:  
4- : S— -

25—

(1.50 ± 0.3) \*

(410 ± 5)

(76.2 ± 0.5)

14.2.2.2

(25,4 ± 1.0)

(321 5)

(6.4 ± 0.5)

26° ± 3'

(22.2±0.5)

0.2

11.

11—

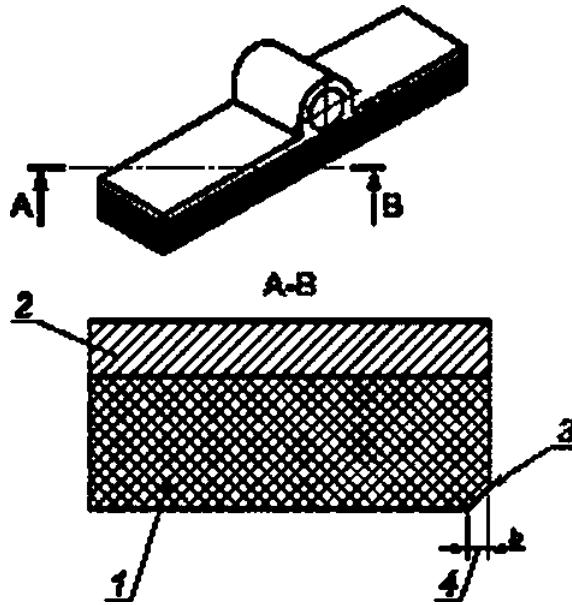
	*				
	0	10	20	30	40
	43 49	58 65	66 73	71 77	74 79
. 1RHD <sup>2*</sup>	53 65				
<sup>2&gt;</sup>	27110. 20403.				

5' 20 °C.

1

26.

49



1—

, 2—

; 3—

. 4—

26—

3

26.

14.2.2.3

(20 ± 2) \*

14.2.3

(20 ± 2)

30

(20 ± 2)'

2 .

76

126 ;

180°  
14.2.4

14.3

14.3.1

14.3.2

14.3.2.1

14.3.2.2

14.3.2.3

14.3.2.4

14.3.3

:  $a_{sE}, a_s$  5 ( . 12).

14.3.4.

:  $a_{KEP}, a_{KPF}, a_{KPP}$

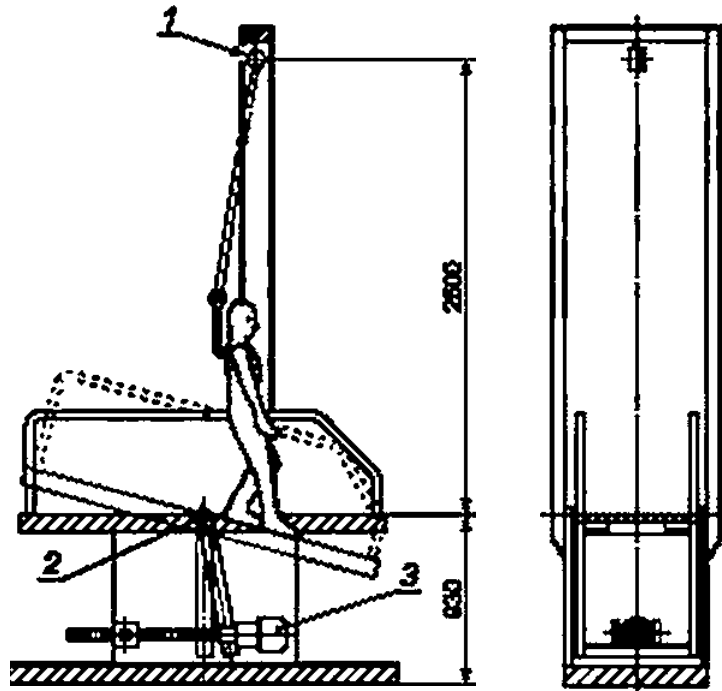
CrD

95 % CrO<sub>9S</sub>.

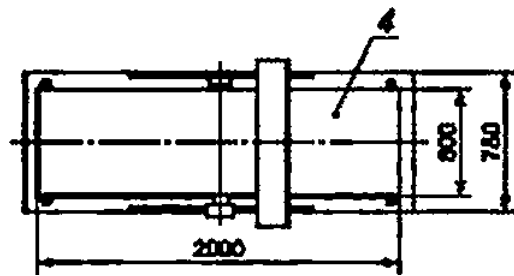
12.

12—

	“5..	”
	10.7'	3.7”
	18.2'	2.7
R	26.8'	2.3'



2120



1— ; 2— . 3— . 4—  
27—

$a_{KET}$  V l E2: \* 2 \* ?2  
E1: 1' 1 2' ^ 2'

14.3.4  
14.3.4.1  
14.3.4.2

(23 ± 5) °C.

100

14.3.4.3

(200 ± 1) 3

14.3.4.4

( 0 )

( ) ,

0.5

14.3.5

±0.2

( ^, — ) .

( , 2 )

13.

2

13

2  
%, 0.2

13 —

°0.1 * ° £1	, = «£  (17)
£1 S *0.1 1	L aXPI <sup>2</sup> aXriJ V <sup>2</sup> (18)
1 S °0.1 1	D, = [ L , + ( 1 - 1 ) <sup>0&lt;~“ 1</sup>   • 4- «. 1 J V <sup>2</sup> (19)
“0.1 ° 1	. = « , (20)

14 15.

14 —

( )

(X.	
<6"	
6 s s 10	R9
10 < \$ 19"	R10
18s27"	R11
27 a S 35"	R12
>35"	R13

15 —

( )

.	
\$a < 18"	
18" Sa < 24"	
24" < a	

14.4

14.4.1

14.4.2

14.4.2.1

3000 ( . 28)

254 .

2564

1006.6

2564

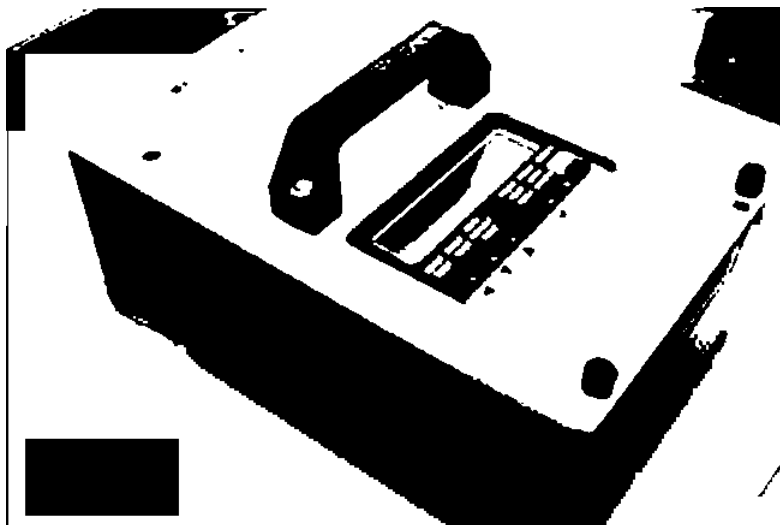
254

3000

1.00.

3000

1,00.



28 —

3000

14.4.2.2	29	30		68
			55.6	19.1
[			-(1.311 0.09) /	1,57
14.4.2.3	SBR-	(	31)	(4,0 ± 0.2)
	9513.			2.5

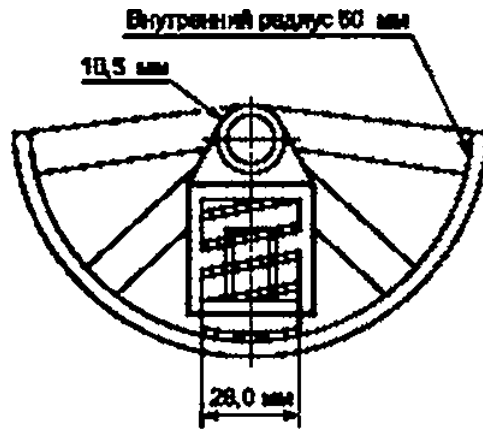


Рисунок 29 — Схема приспособления для шлифования



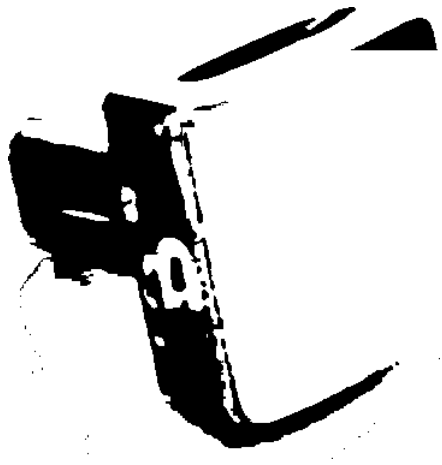
30 —



Рисунок 31 — Внешний вид SBR датчика



14.4.2.4 3000 , .  
 14.4.2.5 (SLS), 0.05 %- -  
 , . -  
 SLS 0.05 %.  
 14.4.2.6 -  
 14.4.2.7 , .  
 14.4.2.8 .  
 14.4.2.9 , . 400  
 (30 ) ,  
 14.4.2.10 - , - .  
 14.4.2.11 .  
 14.4.3  
 14.4.3.1 ( )  
 ) 38.1 228.6 -  
 , .  
 ) (14.4.2.2) -  
 ( . 30). -  
 ) ( ) , -  
 SBR  
 )  
 )  
 ( 32 33).



32 —

SBR



33 —

SBR

14.4.3.2  
 )

\*

)

)

)

)

)

)

SLS (14.4.2.5). )

0.28 0,31. )

)

14.4.3.1. )—).

)

)

)

)

)

14.4.3.3 SLS )

0.05 %- )

)

)

)

)

3000 180 )

90° )

)

)

)— )

14.4.3.1. )— ).

)

)

SBR 14.4.3.1. )

14.4.3.2 )

0.27 0.32. )

14.4.4 ( )

)

14.4.1—14.4.3. )

)

0,67 0.73. )

15

15.1

15.2

-

-

-

15.3

15.3.1

( )

15.3.1.1

2912

6823.

15.3.1.2

) —

(

6823.

15.3.2

/

15.3.2.1

4159,

13 / <sup>3</sup>.

15.3.2.2

". 10 %-

20490.10 %-

15.3.3

1129.

15.4

15.4.1

(55 ± 5) ' .

15.4.1.1

pH 6.5

15.4.1.2

7.5.

15.4.1.3

pH 9

10.

15.4.2

15.4.2.1

3 %,

3118 ( = 1.19 / <sup>3</sup>) 97

15.4.2.2

24363.

200 / <sup>3</sup>.

15.4.2.3

2768.

15.4.3

15.4.3.1

5

15.4.3.2

15.4.3.3

8

500 "1:

2

\*

6-09-4816-80 « (III) ( , )

-2

».

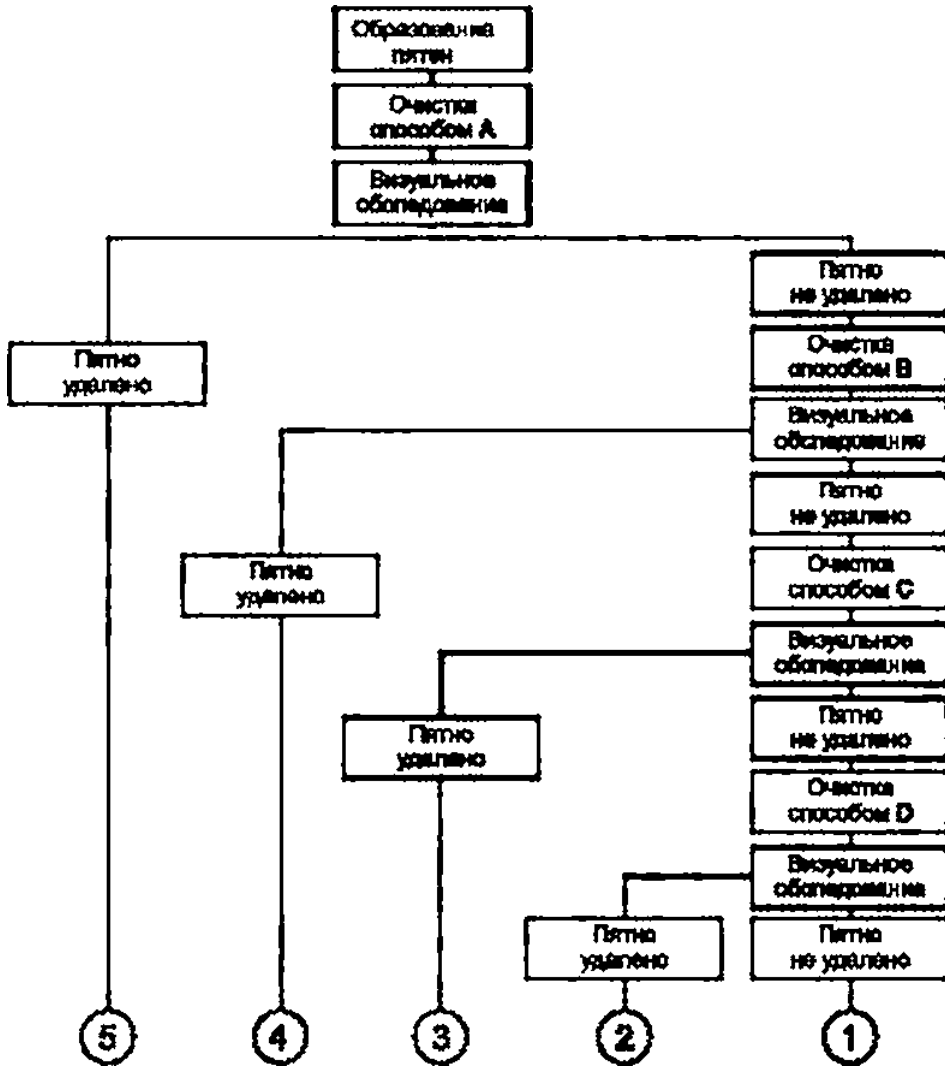
"

6-09-1671-77 « - ( -

)

».

15.4.3.4	D	24	,	-
15.5		(110 ± 5)'	,	-
15.6			,	-
		(110 ± 5) "	, . . .	-
			0.1	-
15.7				-
15.7.1		—	( . 15.3.1.1 15.3.1.2) ( . 15.3.2.1 15.3.3).	-
30			24	-
15.7.2			15.7.1,	-
		15.4.3 ( . . . D).		-
(110 ± 5) *			( 300 ):	-
25	30		15.3.1	-
		34.	,	-
		( . 34).		-
15.8			15.7.1 15.7.2.	-
		34.		-
		(	)	-
		5	; 1	-
		/	,	-



1-5 —

34 —

16

16.1

16.2

16.3

16.3.1

16.3.2

61

960

— 4 %- ( )

; 40 3

16.4

16.4.1

16.4.2

( )

6

16.4.3

16.4.4

16.4.5

16.4.6

16.5

6

4

16.6

16.6.1

(20 ± 2)

V

35.

{20 ± 2}

24

16.6.2

16.7

Cd.

( ) / 2.

< > = < >

<21>

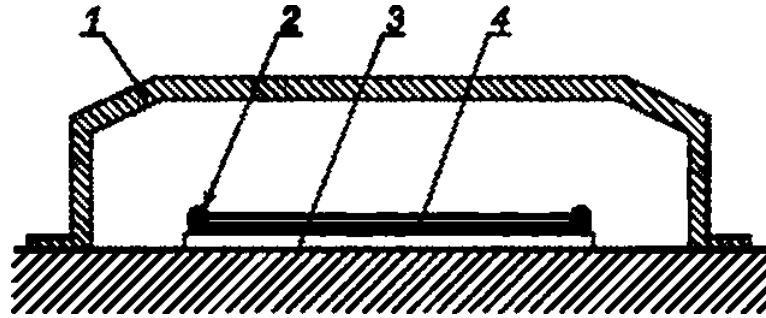
( ) — ( Cd);

16.6.2,

/ 3;

V — , 3;

— , 2.



t — , 2 — . 3 — . 4 —

35 —

so

17

17.1

17.2

£

cf

cf,

8

17.3

CIE.

: 45/

(45/0).

/45,

/

( )

/

(01(f).

/d

d/

10 .

17.4

17.4.1

17.4.1.1

17.4.1.2

( )

( )

( )

17.4.1.3

17.4.2

17.4.3

CIELAB

## 18

18.1

18.2

18.3

18.3.1

(500 ± 20)

(159 ± 1)

2

18.3.2

15.3.2.2,1 %-

18.4

18.4.1

18.4.2

18.5

18.5.1

300

25—30

18.3.2.

(500 ± 15)

150 ° /

2

18.5.2

(18.3.1)

1

(500 ± 20)

(159 ± 1) \*

2

(

18.5.3

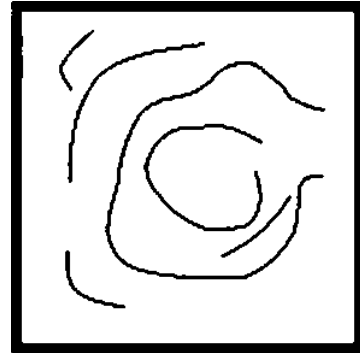
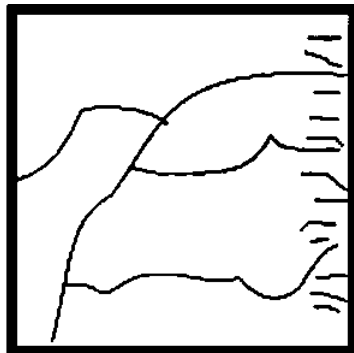
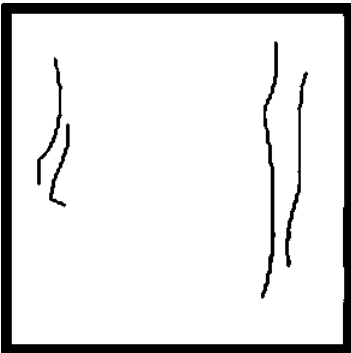
0,5

18.3.2

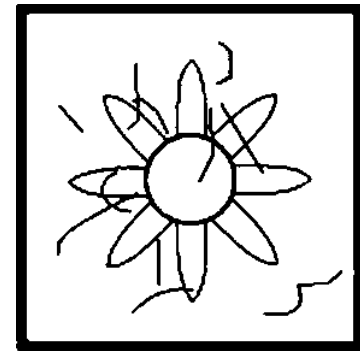
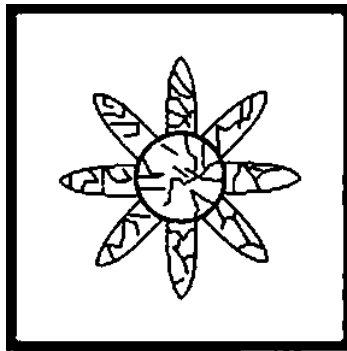
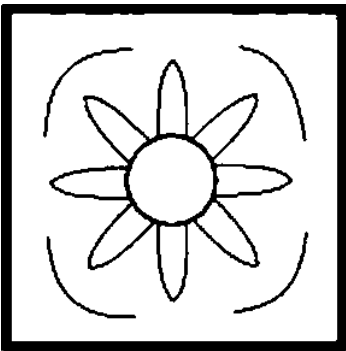


18.5.4

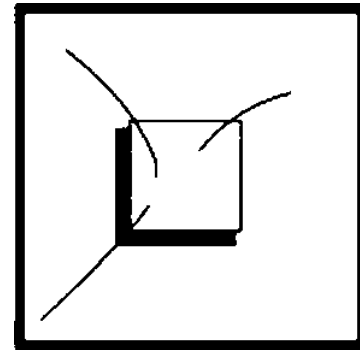
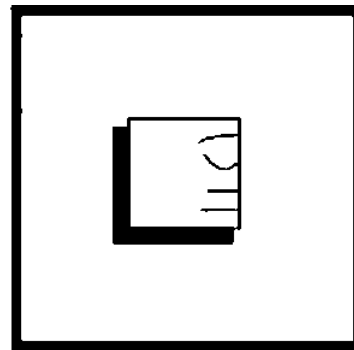
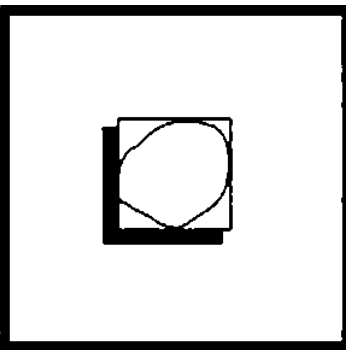
36.



а) Плитки с гладкой поверхностью



)



в) Плитки с рельефной поверхностью

36 —

\*

19

19.1

8

\*

( )

19.2

19.3

19.3.1

25<sup>2</sup>

\*

( , « » ),

19.3.2.

19.3.2

25<sup>2</sup>

1 .

( )

.1 »© ( )  
— CrjOj.

.1.

.1

	. %
0.5	10.0
1.0	29.2
2.0	43.7
3.0	50.0
5.0	66.3
10.0	78,8
20.0	9.6
32.0	93,0
64.0	97,4
96.0	100.0

.2

,

300 500.

( ).

-

2912

6823.

2 3

— 40 %

( )

.1

— FejOj.

.1.

.1

,	. %
1.0	51.3
2.0	53.9
5.0	71.0
10.0	82.2
15.0	88.3
20.0	88.8
25.0	96.5
41.0	96.5
64.0	100.0

.2

,

8

300 500.

( ).

-

.

6823.

15.3.1.2

Fe<sup>^</sup>Oj 8

— 40 %

-

891.001.4:006.354

91.100.25

, : , , , , ,

6—2019/35

..  
..  
..  
..

21.10.2019.

13.1t.2019.

' 1/Λ.

. . . 8.98. .- . . 5.93.

« . 117418 . » - . . 31. . 2.  
www.goslinto.ru info@gostinto.ru