



USSR STATE STANDARD

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**CORROSION-RESISTANT, HEAT-PROOF,  
AND HEAT-RESISTANT  
THIN-SHEET ROLLED STOCK**

**SPECIFICATIONS**

**GOST 5582-75**

**Official Edition**

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## USSR STATE STANDARD

**CORROSION-RESISTANT, HEAT-PROOF, AND HEAT-RESISTANT THIN-SHEET ROLLED STOCK****GOST  
5582-75****Specifications**

OKP (All-Union Product Classification Code) 09 8500

**Date of Introduction** **01.01.77**

This Standard applies to thin-sheet cold-rolled and hot-rolled corrosion-resistant, heat-proof, and heat-resistant rolled stock, manufactured in sheets.

**1. CLASSIFICATION**

1.1. Thin-sheet, corrosion-resistant, heat-proof, and heat-resistant rolled stock shall be classified by:

a) by condition of the material and surface quality into:

cold-rolled cold-hardened – H1,

cold-rolled semi-cold-hardened – ПH1,

cold-rolled heat treated (soft), pickled or after bright annealing – M2a, M3a, and M4a,

cold-rolled heat treated (soft) – M4B,

hot-rolled heat treated (soft), pickled or after bright annealing – M2б, M3б, and M4б,

hot-rolled, heat treated (soft) – M4r;

b) by the rolling precision into:

Increased precision – AT (cold-rolled), A (hot-rolled),

Standard precision – БТ (cold-rolled), Б (hot-rolled);

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Revised Edition with Amendments

## **p. 2 GOST 5582-75**

c) by the type of edges into:

milled edge – HO, cut – O;

d) by non-flatness of rolled stock with an ultimate strength of  $690 \text{ N/mm}^2$  ( $70 \text{ kgf/mm}^2$ ) and lower:

standard – IIH,

increased – IIY,

high – IIB,

extra-high – IIO.

**(Amended Wording, Amendment Nos. 2 and 4).**

### **2. RANGE OF SIZES**

2.1. Hot-rolled thin-sheet rolled stock from 1.5 to 3.9 mm thick and hot-rolled from 0.7 to 3.9 mm thick shall be manufactured.

**(Amended Wording, Amendment No. 2).**

2.2. Shape, dimensions, and maximum deviations for dimensions of thin-sheet rolled stock shall comply with the following requirements:

with the requirements of GOST 19903-74 for hot-rolled

with the requirements of GOST 19904-90 for cold-rolled

2.3. The non-flatness of sheets with an ultimate strength  $70 \text{ kgf/mm}^2$  and less shall comply with GOST 19903-74 and GOST 19904-74 for high (IIB), increased (IIY), and standard (IIH) flatness.

Non-flatness of the sheets with an ultimate strength over 70 to  $85 \text{ kgf/mm}^2$  inclusive shall not exceed 25 mm for 1 m of length.

#### **Notes:**

1. Non-flatness of hot-rolled stock delivered in heat-treated condition without pickling shall not be submitted to normalizing annealing.

2. Longitudinal uniform bending (bending that copies the shape of the roll – winding curvature) of cold-hardened and semi-cold-hardened rolling stock, cut from the rolls, shall not be considered as a rejection criterion.

**(Amended Wording, Amendment No. 2).**

#### **Examples of conventional designations**

Hot-rolled sheet stock of standard accuracy (B), increased flatness (IIY), with a cut edge (HO),  $3 \times 710 \times 1\,420 \text{ mm}$  in dimensions in accordance with GOST 19903-74, made from steel of grade 20X13, heat treated, pickled, with a surface group M36:

$$\text{Лист} \frac{Б - ПУ - НО - 3 \times 710 \times 1420 \text{ ГОСТ } 19903 - 74}{20X13 - M36 \text{ ГОСТ } 5582 - 75}$$

Sheet cold-rolled stock of increased accuracy (AT), standard flatness (ПН), with a cut edge (О), 2 × 1 000 × 2000 mm in dimensions in accordance with GOST 19904-90, from steel of grade 12X18H10T, cold-hardened:

$$\text{Лист} \frac{AT - ПН - 0 - 2 \times 1000 \times 2000 \text{ ГОСТ } 19904 - 90}{12X18H10T - H1 \text{ ГОСТ } 5582 - 75}$$

Sheet cold-rolled stock of standard accuracy (БТ), standard flatness (ПН), with a cut edge (О), 1,2 × 1 100 × 2 300 mm in dimensions in accordance with GOST 19904-9,0 from steel of grade 08X13, heat treated, pickled, surface group M2a:

$$\text{Лист} \frac{БТ - ПН - 0 - 1,2 \times 1100 \times 2300 \text{ ГОСТ } 19904 - 90}{08X13 - M2a \text{ ГОСТ } 5582 - 75}$$

**(Amended Wording, Amendment No. 4).**

### 3. TECHNICAL REQUIREMENTS

3.1. The following grades of rolled stock shall be manufactured: 11X11H2B2MΦ, 16X11H2B2MΦ, 20X13, 30X13, 40X13, 09X16H4Б, 12X13, 14X17H2, 08X13, 12X17, 08X17T, 08X18Tч, 08X18T1, 15X25T, 15X28, 20X13H4Г9, 09X15H8Ю, 07X16H6, 08X17H5M3, 20X20H14C2, 08X22H6T, 12X21H5T, 08X21H6M2T, 20X23H13, 15X18H12C4ТЮ, 10X11H20T2P, 10X13Г18Д, 10X14Г14H4T, 10X14AГ15, 12X17Г9AH4, 03X17H14M3, 10X17H13M2T, 10X17H13M3T, 08X17H15M3T, 12X18H9, 17X18H9, 08X18H10, 08X18H10T, 12X18H10T, 12X18H10E, 03X18H11, 03X18H12-ВН, 08X18H12T, 08X18H12Б, 03X21H21M4ГБ, 20X23H18, 20X25H20C2, 12X25H16Г7AP, 06XH28MT, and 06XH28MДT.

3.2. Chemical composition of steels shall be in accordance with GOST 5632-72.

#### Notes:

1. Deviations in concentration of titanium in steel of grade 12X21H5T shall not be allowed. Manufacturing sheets with permissible deviations by titanium in accordance with GOST 5632-72 shall be allowed.

2. Titanium concentration in steel of grade 12X18H10T rolled on continuous and combination mills shall be [5 (C – 0.02) – 0.7] %, the ratio of chromium to nickel shall not exceed 1.8.

**3.1 and 3.2. (Amended Wording, Amendment No. 2).**

#### p. 4 GOST 5582-75

3.3. Microstructure of steel shall not have traces of contraction cavities, stratification, foreign inclusions, cracks, and blisters, and shall be ensured by the manufacturing techniques.

No split cracks and stratification shall be determined on sheet cuts.

3.4. Mechanical properties of the rolled stock, submitted to heat treatment (softening) shall comply with the standards stipulated in table 1.

Production of the rolled stock from steel of grades 08X18T1, 10X17H13M2T, 10X17H13M3T, 08X18H10T, 12X18H10T, and 20X23H18 with increased values of mechanical properties stipulated in table 1a shall be allowed by agreement with the customer.

Table 1a

Steel grade	Mode of heat treatment of sheets (recommended)	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_5$ , %
		No less than		
08X18T1	Annealing at 830 to 860°C, cooling in air or normalizing annealing at 960 to 1000°C, cooling in air or in water	490 (50)	—	32
10X17H13M2T	Hardening at 1050 to 1080°C, cooling in water or in the air	550 (56)	—	40
10X17H13M3T	Hardening at 1050 to 1080°C, cooling in water or in the air	550 (56)	—	40
08X18H10T	Hardening at 1050 to 1080°C, cooling in water or in the air	550 (56)	216 (22)	42
12X18H10T	Hardening at 1050 to 1080°C, cooling in water or in the air	550 (56)	216 (22)	42
20X23H18	Hardening at 1080 to 1150°C, cooling in water or in the air	530 (54)	—	37

#### (Amended Wording, Amendment No. 4).

3.5. Mechanical properties of cold-hardened or semi-cold-hardened rolled stock shall comply with the standards stipulated in table 2.

Table 1

Steel grade	Mode of heat treatment of the sheets (recommended)	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_5$ , %
		No less than		
11X11H2B2MΦ	Annealing at 760 to 780°C	No more than 830 (85)	—	22
16X11H2B2MΦ	Annealing at 760 to 780°C	No more than 830 (85)	—	22
20X13	Annealing or stress-relief at 740 to 800°C	490 (50)	—	20
30X13	Annealing or stress-relief at 740 to 800°C	540 (55)	—	17
40X13	Annealing or stress-relief at 740 to 800°C	550 (56)	—	15
09X16H4Б	Annealing at 620 to 640°C, holding for 4 to 8 hours, oven cooling to 200 to 300°C, then in the air	No more than 1 130 (115)	—	—
12X13	Annealing or stress-relief at 740 to 780°C	440 (45)	—	21
14X17H2	Annealing or stress-relief at 650 to 700°C	By agreement		
08X13	Annealing or stress-relief at 740 to 780°C	410 (42)	—	21
12X17	Annealing or stress-relief at 740 to 780°C	490 (50)	—	20
08X17T	Annealing or stress-relief at 740 to 780°C	460 (47)	—	20
	Annealing at 830 to 860°C, cooling in air or normalizing annealing at 960 to 1 000°C, cooling in air or in water	460 (47)	—	30
08X18Tч	Hardening at 920°C, cooling in water	470 (48)	—	35
08X18T1	Annealing at 830 to 860°C, cooling in air or normalizing annealing at 960 to 1 000°C, cooling in air or in water	460 (47)	—	30
15X25T	Annealing or stress-relief at 740 to 780°C	530 (54)	—	17
20X13H4Г9	Hardening at 1 050 to 1 080°C, cooling in water or in the air	640 (65)	—	40
15X28	Annealing or stress-relief at 740 to 780°C	530 (54)	—	17
09X15H8Ю	Normalizing annealing at 1 040 to 1 080°C	No more than 1 080 (110)	—	20
07X16H6	Hardening at 1 030 to 1 070°C, cooling in water or in the air	No more than 1 180 (120)	—	20

Table 1 (cont.)

Steel grade	Mode of heat treatment of the sheets (recommended)	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_5$ , %
		No less than		
08X17H5M3	Hardening at 1 030 to 1 080°C, cooling in air or in water	No more than 1180 (120)	610 (62)	20
20X20H14C2	Hardening at 1 000 to 1 080°C, cooling in air or in water	590 (60)	—	40
08X22H6T	Hardening at 950 to 1 050°C, cooling in water or in the air	640 (65)	—	20
12X21H5T	Hardening at 1 000 to 1 080°C, cooling in water or in the air	690 (70)	440 (45)	18
08X21H6M2T	Hardening at 1 000 to 1 080°C, cooling in water or in the air	590 (60)	—	22
20X23H13	Hardening at 1 100 to 1 150°C, cooling in water or in the air	540 (55)	—	35
15X18H12C4TiO	Hardening at 1 020 to 1 050°C, cooling in water	720 (73)	345 (35)	30*
10X11H20T2P	Hardening at 1 020 to 1 060°C, cooling in water or in the air	No more than 740 (75)	—	35
10X14Г14H4T	Hardening at 1 050 to 1 080°C, cooling in water	690 (70)	295 (30)	35
10X14AГ15	Hardening at 950 to 1 100°C, cooling in water	740 (75)	—	45
12X17Г9AH4	Hardening at 1 050 to 1 080°C, cooling in water or in the air	690 (70)	—	40
03X17H14M3	Hardening at 1 030 to 1 070°C, cooling in water or in the air	490 (50)	196 (20)	40
10X17H13M2T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	530 (54)	225 (23)	38
10X17H13M3T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	530 (54)	—	38
08X17H15M3T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	530 (54)	205 (21)	35

Table 1 (cont.)

Steel grade	Mode of heat treatment of the sheets (recommended)	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_5$ , %
		No less than		
12X18H9	Hardening at 1 050 to 1 080°C, cooling in water or in the air	540 (55)	195 (20)	38
17X18H9	Hardening at 1 050 to 1 080°C, cooling in water or in the air	590 (60)	185 (19)	35
08X18H10	Hardening at 1 050 to 1 080°C, cooling in water or in the air	510 (52)	205 (21)	45
08X18H10T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	530 (54)	—	40
12X18H10T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	530 (54)	205 (21)	40
12X18H10E	Hardening at 1 050 to 1 080°C, cooling in water or in the air	No more than 740 (75)	—	35
03X18HĬ	Hardening at 1 050 to 1 080°C, cooling in water or in the air	490 (50)	196 (20)	40
03X18H12-BИ	Hardening at 1 050 to 1 080°C, cooling in water or in the air	390 (40)	—	40
08X18H12T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	510 (52)	—	35
08X18H12Б	Hardening at 1 050 to 1 080°C, cooling in water or in the air	530 (54)	—	40
03X21H21M4ГБ	Hardening at 1 080 to 1 130°C, cooling in water or in the air	540 (55)	245 (25)	25**
20X23H18	Hardening at 1 080 to 1 150°C, cooling in water or in the air	510 (52)	245 (25)	35
20X25H20C2	Hardening at 1 050 to 1 100°C, cooling in water or in the air	490 (50)	—	35
12X25H16Г7AP	Hardening at 1 050 to 1 100°C, cooling in water or in the air	No more than 980 (100)	—	35



Table 1 (cont.)

Steel grade	Mode of heat treatment of the sheets (recommended)	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_5$ , %
		No less than		
06XH28MT	Hardening at 1 050 to 1 080°C, cooling in water or in the air	540 (55)	—	35
06XH28MДT	Hardening at 1 050 to 1 080°C, cooling in water or in the air	540 (55)	—	35

\* Relative elongation  $\delta_{25}$

\*\* Relative elongation  $\delta_{10}$

Notes :

1. Recommended mode and type of heat treatment at the manufacturer are given in the table.
2. Changing the mode and type of heat treatment shall be allowed by agreement with the customer..
3. Not carrying out heat treatment for hot-rolled stock from steel of grades 20X13, 30X13, 40X13, 08X17T, 12X13, 14X17H2, 08X13, 12X17, 08X18T1, 15X25T, and 15X28 shall be allowed if mechanical properties stipulated in table 1 have been obtained.

**4. Removed.**

5. Yield stress for rolled stock from steel of grade 12X18H10T shall be determined at the customer's request.

**6. Removed.**

**(Amended Wording, Amendment Nos. 1, 2, 3, and 4).**

Table 2

Steel grade	Condition on delivery	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_r$ , %
		No less than		
20X13H4Г9	Cold hardened	No less than 980 (100)	—	15
15X18H12C4TЮ	Cold hardened	No less than 880 (90)	685 (70)	10
12X17Г9AH4	Cold hardened	No less than 980 (100)	—	15
12X18H9	Cold hardened	930 to 1 230 (95 to 125)	—	13
17X18H9	Cold hardened	980 to 1 230 (100 to 125)	—	13
17X18H9	Semicold hardened	740 to 980 (75 to 100)	—	18
08X18H10	Semicold hardened	740 to 930 (75 to 95)	—	25
08X18H10	Cold hardened	No less than 930 (95)	—	10
12X18H10T	Semicold hardened	No less than 740 (75)	—	25
12X18H10T	Cold hardened	880 to 1080 (90 to 100)	—	10
03X18H12-BИ	Semicold hardened	No less than 740 (75)	—	12

Notes:

1. **Removed.**

2. Carrying out heat treatment in order to ensure properties stipulated in table 2 shall be allowed by agreement with the customer.

**(Amended Wording, Amendment No. 2).**

Table 3

Steel grade	Mode of samples' heat treatment (recommended)	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_r$ , %
		No less than		
11X11H2B2MΦ	Hardening at 1 000 to 1 150°C, cooling in air, stress-relief at 560 to 600°C, cooling in air	No more than 880 (90)	—	10
16X11H2B2MΦ	Hardening at 960 to 1 000°C, cooling in air, stress-relief at 240 to 400°C, cooling in air	1 320 (135)	—	10
09X16H4Б	Hardening at 970 to 1 050°C, cooling in air, stress-relief at 300 to 350°C, endurance 2 ч, cooling in air	1 230 (125)	—	8
14X17H2	Hardening at 950 to 975°C, cooling in oil, stress-relief at 275 to 350°C, cooling in air	1 080 (110)	—	10
07X16H6	Hardening at 960 to 990°C, cooling in air, age hardening at – 70°C for 2 hours, stress-relief at 350 to 400°C, endurance for 1 hour, cooling in air	1 080 (110)	835 (85)	12
08X17H5M3	Hardening at 940°C (±10), cooling in air or in water, age hardening at – 70°C for 2 hours, stress-relief at 450°C (±10), endurance for 1 hour, cooling in air	1 180 (120)	885 (90)	9
10X11H20T2P	Hardening at 1 020 to 1 060°C, cooling in water or in the air, aging treatment at 720°C (±10), endurance for 4 to 12 hours, cooling in air	960 (98)	—	20

(Amended Wording, Amendment No. 2)

Table 4

Steel grade	Mode of heat treatment	Ultimate strength $\sigma_U$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Yield stress $\sigma_y$ , N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	Relative elongation $\delta_r$ , %
		No less than		
12X18H10T	Hardening at 1 050 to 1 080°C, cooling in water or in the air	700	250 (25)	40
12X25H16Г7AP	Hardening at 1 050 to 1 100°C, cooling in water or in the air	900	180 (18)	30
10X11H20T2P	Hardening at 1 020 to 1 060°C, cooling in water or in the air, aging treatment at 720°C ( $\pm 10$ ), endurance for 8 hours, cooling in air	700	590 (60)	10

Note. Hardening of steel shall be carried out in sheets.

(Amended Wording, Amendment No. 2).

Table 5

Surface group	Condition of material	Description of surface	Description of permissible surface defects	Depth of permissible defect occurrence
1	Cold hardened (H) and semicold hardened (ПН)	Shining without bubbles – blisters, rolled blisters, skins, rolled-in metal particles, ripple marks and overpickling, and with an insignificant difference of shades	Scratches, dents, marks, hairlines, and rolled marks	1/2 the sum of maximum deviations for thickness
2	a) cold-rolled, heat treated, pickled, or after bright annealing	Silver-mate or shining, without bubbles – blisters, rolled blisters, skins, rolled-in metal particles, scales, and overpickling	Ripple marks, scratches, marks, dents, hairlines, and rolled marks	1/2 the sum of maximum deviations for thickness

Table 5 (cont.)  
 p. 12 GOST 5583-75

Surface group	Condition of the material	Description of surface	Description of permissible surface defects	Depth of permissible defect occurrence
2	b) hot-rolled, heat treated, pickled, or after bright annealing	Silver-mate or shining, without bubbles – blisters, rolled blisters, skins, rolled-in metal particles, scales, and overpickling	Ripple marks, scratches, marks, dents, hairlines, pits, and rolled marks	1/2 the sum of maximum deviations for thickness
3	a) cold-rolled, heat treated, pickled, or after bright annealing	Silver-mate or shining, without bubbles – blisters, rolled blisters, skins, rolled-in metal particles, scales and overpickling	Ripple marks, scratches, marks, dents, hairlines rolled marks	The sum of maximum deviations for thickness
	b) hot-rolled, heat treated, pickled, or after bright annealing		Ripple marks, scratches, marks, dents, hairlines, pits, and rolled marks	
4	a) cold-rolled, heat treated, pickled, or after bright annealing	Silver-mate or shining without bubbles – blisters, rolled blisters, scales, and overpickling	Ripple marks, scratches, marks, dents, hairlines, rolling skins, and rolled marks	The sum of maximum deviations for thickness
	b) hot-rolled, heat treated, pickled, or after bright annealing		Ripple marks, scratches, marks, dents, hairlines, pits, rolled marks, and rolling skins	
	c) cold-rolled and heat treated	Dark	Ripple marks, scratches, marks, dents, hairlines, rolling skins rolled marks, and scales	

Table 5 (cont.)

Surface group	Condition of the material	Description of surface	Description of permissible surface defects	Depth of permissible defect occurrence
4	d) hot-rolled and heat treated	Dark	Ripple marks, scratches, marks, dents, hairlines, pits, rolling skins, rolled marks, and scales	The sum of maximum deviations by thickness

Notes :

1. The requirements for surface quality of heat treated rolled stock, regarding the amount and character of defects, can be confirmed by comparison with standard samples by agreement between the customer and the manufacturer.
2. Gentle grinding of surface defects with an abrasive material with graininess in accordance with GOST 3647-80 (no larger than No. 16 for the 1<sup>st</sup> and 2<sup>nd</sup> groups, and no larger than No. 25 for the 3<sup>rd</sup> and 4<sup>th</sup> depth groups) shall be allowed, as long as the rolled stock does not exceed the limits of minimum thickness. Sparking during grinding shall not be allowed.
3. Rolled stock may be produced without grinding and cutting of non-permissible defects at the customer's request.
4. Oxidation tints and various shades from pickling on cold-rolled and hot-rolled heat treated rolled stock, pickled, or after bright annealing shall not be considered as rejection criteria.

(Amended Wording, Amendments Nos. 2 and 4).

## p. 14 GOST 5582-75

3.6. Mechanical properties of the rolled stock, determined for standard heat-treated samples shall comply with the standards stipulated in table 3.

3.7. Mechanical properties of the rolled stock made from steel of grades 12X18H10T, 12X25H16Г7AP, and 10X11H20T2P, determined at the customer's request at increased temperatures on heat treated samples, shall comply with standards stipulated in table 4.

3.8. The rolled stock shall comply with the requirements stipulated in table 5 regarding type and quality of surfaces.

3.9. Steels of grades 20X13H4Г9, 09X15H8Ю, 08X22H6T, 08X21H6M2T, 10X14Г14H4T, 12X17Г9AH4, 03X17H14M3, 10X17H13M2T, 10X17H13M3T, 08X17H15M3T, 12X18H9, 08X18H10, 08X18H10T, 12X18H10T, 12X18H10E, 03X18H11, 03X18H12-ВН, 08X18H12T, 08X18H12Б, 03X21H21M4ГБ, 06XH28MДТ, and 06XH28MT shall not have propensity for inter-crystalline corrosion.

3.10. Sheets shall be produced at the customer's request as follows:

a) with inspection of steel of grade 12X21H5T for the absence of propensity for embrittlement, mode of heat treatment and standards shall comply with the values stipulated in table 6;

Table 6

Mode of sample heat treatment	Thickness of the sheet, mm	Increase of the ultimate strength, %, no more than	Impact elasticity kgf x m/cm <sup>2</sup> , no less than
Heating up to 550°C, endurance for 1 hour, cooling in oven (at a speed of 100°C per hour) down to 300°C, then cooling in air	Up to 2	50.0*	—
	2 or more	—	4.0

\* Increase in the ultimate strength after stress-relief shall be determined in percent of ultimate strength of heat treated soft rolled stock.

b) with a standardized surface roughness of cold-hardened rolled stock and semi-cold-hardened rolled stock.

c) with a standardized concentration of gases in steel of grade 03X18H12-ВН, which shall not exceed: 0.006 % for oxygen and 0.03 % nitrogen;

d) without mechanical test and other tests, stipulated in this Standard;

e) with determination of mechanical properties at increased temperatures for steel grades which have not been listed in table 4;

- f) with determination of yield stress for steel grades whose standards of yield stress have not been listed in table 1;
- g) with bending test;
- h) with kink test;
- i) with spherical cup drawing test;
- j) with determination of alpha – phase in austenitic and is austenitic – ferritic steels;
- k) with inspection for the absence of propensity of the steel for intercrystalline corrosion for the grades, which have not been listed in GOST 6032-89;
- l) with inspection for the absence of steel propensity for intercrystalline corrosion for grades 08X17T, 15X25T, 07X16H6, and 08X17H5M3;
- m) with monitoring of internal defects by non-destructive test methods.

*Note.* Methods of tests in accordance with subclauses *j*, *k*, and *m*, as well as standards during testing in accordance with subclauses *b*, *e*, *f*, *g*, *h*, *i*, *j*, *k*, *l*, and *l* shall be established by agreement between the customer and the manufacturer.

**(Amended Wording, Amendment No. 1).**

#### **4. ACCEPTANCE PROCEDURE**

4.1. Rolled stock shall be accepted in batches. A batch shall consist of the metal of the same melt, same condition of the material, same thickness, and one mode of heat treatment for heat treated rolled stock.

Delivery of batches consisting of different melts of the same grade shall be allowed by agreement with the customer.

4.2. The following samples shall be taken from the batch for inspection of quality of the rolled stock:

- a) all sheets from the batch shall be taken for the monitoring of surface, cuts, non-flatness, and dimensions;
- b) in accordance with GOST -7565-81 for chemical analysis;
- c) three for determination of gas concentration, and two from the melt for determination of alpha-phase;
- d) two sheets from the batch shall be taken for elongation tests at standard and increased temperatures, embrittlement, for bending, kink, and spherical cup drawing tests, determination of surface roughness, tests for propensity for intercrystalline corrosion, and impact elasticity.

4.3. If test results are unsatisfactory against one of the indicators, a re-test shall be carried out on a sample selected in accordance with GOST 7566-81.



## **p. 16 GOST 5582-75**

4.4. Indication of chemical composition of steel and contents of alpha-phase in the quality certificate, in accordance with the quality certificate for the blank, shall be allowed.

**(Amended Wording, Amendment No. 4).**

4.5. Macrostructure shall be inspected visually on the edges of the sheets.

**(Subsequently Inserted, Amendments Nos. 2 and 4).**

## **5. TEST METHODS**

5.1. Sampling for definition of chemical composition shall be in accordance with GOST 7565-81; chemical analysis shall be in accordance with GOST 12344-88, GOST 12345-88, GOST 12346-78, GOST 12347-77, GOST 12348-78, GOST 12349-83, GOST 12350-78, GOST 12351-81, GOST 12352-81, GOST 12353-78, GOST 12354-81, GOST 12355-78, GOST 12356-81, GOST 12357-84, GOST 12358-82, GOST 12359-81, GOST 12360-82, GOST 12361-82, GOST 12362-79, GOST 12363-79, GOST 12364-84, GOST 12365-84, or another method ensuring the required accuracy of testing.

**(Amended Wording, Amendment No. 4).**

5.2. Thickness of the rolled stock shall be measured by a micrometer in accordance with GOST 6507-90. Linear dimensions of the sheets shall be measured using measuring tape in accordance with GOST 7502-89, a metal ruler in accordance with GOST 427-75, or another measuring tools ensuring the accuracy stipulated by this Standard.

Deviations of shape shall be determined in accordance with GOST 26877-86 using a metal ruler in accordance with GOST 427-75, or other measuring tools ensuring the accuracy stipulated by this Standard.

**(Amended Wording, Amendments Nos. 2 and 4).**

5.3. Surface quality shall be inspected visually without use of magnifying devices.

If disputes in evaluation arise, depth of defect occurrence shall be determined on transverse micro-sections using an ocular micrometer on a microscope of type МИМ-7, МИМ-8, “Неофот”, or other with the corresponding accuracy, manufactured in accordance with the reference documentation.

5.2 and 5.3. **(Amended Wording, Amendment No. 2).**

5.4. Selection and preparation of samples for determination of gas concentration and gas analysis shall be in accordance with GOST 17745-90. Gas contents shall be determined by the manufacturer who performs the melting of the steel.

5.5. One sample from each sheet being tested shall be taken for elongation tests at standard and increased temperatures, testing for embrittlement, bending, kink, and spherical cup drawing tests, determination of surface roughness, tests for propensity for intercrystalline corrosion, and impact elasticity.

5.6. Sampling and preparation of samples for testing of mechanical and technological properties shall be carried out across the grain in accordance with GOST 7564-73.

5.7. Test for elongation at a temperature of  $20^{\circ}\text{C}$  ( $_{-10}^{+15}$ ) of 3.0 mm and thicker sheets shall be carried out in accordance with GOST 1497-84, and in accordance with GOST 11701-84 for sheets over 3.0 mm thick on samples with an initial gauge length of  $l_0 = 5.65\sqrt{F_0}$ . Carrying out testing of sheets to 3 mm thick on the samples with initial gauge length of  $5.65\sqrt{F_0}$  and 20 mm width  $b_0$  shall be allowed.

Testing of the rolled stock from steel of grade 03X21H21M4ГБ shall be carried out in accordance with GOST 11701-84 on samples with initial operating length of  $l_0 = 25\sqrt{F_0}$ .

Testing rolled stock made from steel of grade 15X18H12C4ТЮ 3.0 mm and thicker shall be carried out in accordance with GOST 1497-84 on samples with an initial gauge length of  $l_0 = 11.3\sqrt{F_0}$ . Sheets less than 3.0 mm thick shall be tested in accordance with GOST 11701-84 on samples with an initial gauge length of  $l_0 = 11.3\sqrt{F_0}$  and 20 mm width  $b_0$ .

**(Amended Wording, Amendment No. 2).**

5.8. Testing for kink shall be in accordance with GOST 13813-68.

5.9. Testing for bending shall be in accordance with GOST 14019-80.

5.10. The spherical cup drawing test shall be in accordance with GOST 10510-80.

5.11. If results of testing for mechanical properties of heat-treated control samples made from steel of grade 08X17H5M3 are unsatisfactory, re-testing of heat-treated samples in accordance with the following schedule shall be allowed: hardening at  $920^{\circ}\text{C}$  ( $\pm 10$ ), cooling in air or in water, age hardening at  $-70^{\circ}\text{C}$  for 2 hours, stress-relief at  $450^{\circ}\text{C}$  ( $\pm 10$ ), endurance for 1 hour, and cooling in air.

5.12. Testing for an intercrystalline corrosion shall be in accordance with GOST 6032-84. Steel of grade 06XH28MT shall be tested in accordance with method B in accordance with GOST 6032-84. The samples shall be submitted to additional heating at  $650^{\circ}\text{C}$  for 1 hour.

**(Amended Wording, Amendment No. 1).**

## **p. 18 GOST 5582-75**

5.13 Periodicity of testing for embrittlement of steel of grade 12X21H5T shall be established by the manufacturer.

5.14. Application of statistical methods of monitoring in accordance with a technique coordinated with the customer shall be allowed for testing the mechanical properties and absence of propensity to intercrystalline corrosion.

5.15. Absence of internal defects stipulated in clause 3.3 in the sheets shall be ensured by the manufacturing techniques for steel and sheets.

5.16. Testing for elongation at increased temperatures shall be carried out in accordance with GOST 9651-84.

5.17. Testing for impact elasticity shall be in accordance with GOST 9454-78.

5.18. Determination of alpha – phase shall be in accordance with GOST 11878-66.

5.19. Surface roughness shall be inspected using profilometers, profilographs, optical tools, or in accordance with the working samples, which shall comply with the requirements of GOST 2789-73.

**5.15-5.19. (Subsequently Inserted, Amendment No. 4).**

## **6. PACKING, MARKING, TRANSPORTATION, AND STORAGE**

6.1. Packing, marking, transportation, and storage shall be in accordance with GOST 7566-81 with the following additions.

6.2. Sheets shall be packed into bundles.

6.3. Marking a metal card with dimensions no less than 200 x 300 mm, which shall be reliably secured in no less than two places to the packing tape on top of the bundle of sheets, instead of marking directly on the upper sheet in the bundle, shall be allowed.

6.4. Weight of the cargo package for machine loading and unloading on open transport containers shall not exceed 10 metric tons, and 1 250 metric tons – when loaded and unloaded into covered containers.

**6.1 to 6.4. (Amended Wording, Amendment No. 2).**

6.5. Integration of cargo packages shall be in accordance with GOST 24597-81 and GOST 21650-76.

**(Amended Wording, Amendment Nos. 2 and 3).**

6.6. Packs or bundles shall be reliably tied with packing tape in accordance with GOST 3560-73, GOST 6009-74, or other reference documentation.

6.7. The sheets may be transported by all types of transport in accordance with the effective rules for the given type of transport and conditions of handling and securing, approved by the USSR Ministry of Railways.

**6.6; 6.7. (Amended Wording, Amendment No. 2).**

## DETAILS

### 1. DEVELOPED AND SUBMITTED by the Ministry of Ferrous Metallurgy

#### DEVELOPERS:

I. N. Golikov, A. P. Gulyayev, Y. A. Ulyanin, S. B. Maslyenkov, A. S. Kaplan, R. I. Kolyasnikova, R. I. Trubyetskova, N. A. Sorokina, V. I. Fyedorova, S. S. Gratsianova, O. I. Putimtsyeva, V. V. Karateeva, A. N. Kosaya, N. G. Chyebotaryenko, I. F. Medelyan, and R. A. Vorobyeva

### 2. APPROVED AND INTRODUCED by Decree No. 3949, dated 19.12.75 of the Committee for Standards under the USSR Council of Ministers

### 3. REFERENCE DOCUMENTATION

Number of reference document referred to	Number of clause	Number of reference document referred to	Number of clause
GOST 427-75	5.2	GOST 12352-81	5.1
GOST 1497-84	5.7.	GOST 12353-78	5.1
GOST 3560-73	6.6	GOST 12354-81	5.1
GOST 3647-80	3.8	GOST 12355-78	5.1
GOST 5632-72	3.2	GOST 12356-81	5.1
GOST 6009-74	6.6	GOST 12357-84	5.1
GOST 6032-89	3.10 and 5.12	GOST 12358-82	5.1
GOST 6507-90	5.2	GOST 12359-81	5.1
GOST 7502-89	5.2	GOST 12360-82	5.1
GOST 7564-73	5,6	GOST 12361-82	5.1
GOST 7565-81	4.2 and 5.1	GOST 12362-79	5.1
GOST 7566-81	4.3 and 6.1	GOST 12363-79	5.1
GOST 10510-80	5.10	GOST 12364-84	5.1
GOST 11701-84	5.7	GOST 12365-84	5.1
GOST 12344-88	5.1	GOST 13813-68	5.8
GOST 12345-88	5.1	GOST 14019-80	5.9
GOST 12346-78	5.1	GOST 17745-90	5.4
GOST 12347-77	5.1	GOST 19903-74	2.2, 2.3, and 5.2
GOST 12348-78	5.1	GOST 19904-90	2.2, 2.3, and 5.2
GOST 12349-83	5.1	GOST 21650-76	6.5
GOST 12350-78	5.1	GOST 24597-81	6.5
GOST 12351-81	5.1		

### 4. Restrictions on period of validity removed by Gosstandart Decree No. 1508, dated 27.09.91

### 5. Revised Edition (August 1993) with Amendment Nos. 1,2, 3, and 4, approved in July 1979, December 1986, May 1990, September 1991 (IUS (Standards Information Catalog) 8-79, 3-87. 8-90, and 12-91)

**CORRECTIONS INTRODUCED INTO INTERSTATE STANDARDS**

**B. METALS AND METAL PRODUCTS**

**Group B33**

**GOST 5582-75 Corrosion-Resistant, Heat-Proof, and Heat-Resistant Thin-Sheet Steel.  
Specifications (Revised Edition, August 1993)**

Where	Printed	Shall be as follows
Clause 2.1	from 0.7 to 3.9 mm thick (IUS No. 10, 1994)	from 0.5 to 3.9 mm thick

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## CORRECTIONS INTRODUCED INTO INTERSTATE STANDARDS

### B. METALS AND METAL PRODUCTS

#### Group B33

#### to GOST 5582-75 Corrosion-Resistant, Heat-Proof, and Heat-Resistant Thin-Sheet Steel. Specifications. (Revised Edition, 1993)

Where	Printed	Shall be as follows
Clause 1.1. Subclause b	b) by rolling accuracy into: increased accuracy – AT (cold-rolled), A (hot-rolled),  standard accuracy – BT (cold-rolled), B (hot-rolled);	b) by rolling accuracy in accordance with GOST 19903-74 for the hot-rolled stock;  in accordance with GOST 19904-90 for the cold-rolled stock;
Clause 2.3. Examples of conventional designations  second example	Increased accuracy (AT), standard flatness (ПH)  AT – ПH -	increased accuracy: (AT) by thickness, (AIII) by width, (AД) by length, and of standard flatness (ПH)  AT – AIII – AД – ПH -

Corrections to GOST 5582-75 (cont.)

Where	Printed	Shall be as follows
Third example	Standard accuracy (БТ), standard flatness (ПН)	Standard accuracy: (БТ) by thickness, (БШ) by width, (БД) by length, and of standard flatness (ПН) БТ – БШ – БД – ПН -
Clause 3.4. Table 1. Column “Yield stress $\sigma_y$ N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )”. For steel of grade:	БТ – ПН -	
17X18H9	185 (19)	—
08X18H10	205 (21)	185 (19)
08X18H10T	—	205 (21)
Note 5	5. Yield stress for rolled stock from steel of grade 12X18H10T shall be determined at the customer's request	5. <b>(Removed, Amendment No. 4)</b>

(IUS No. 3, 1998)