GOST : 4986-79

TITLE : COLD-ROLLED STRIPS OUT OF CORROSION - RESISTANT AND HEAT - RESISTANT STEEL

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Page 14:

Clause 3.11.1. Erichsen test (Mt). A test in which a piece of metal sheet is pressed into a cup by means of a plunger; used to estimate the suitability of sheet for pressing or drawing operations.

Checked/Authenticated by D;C: Section

Name; K. Appa Rao.

Signature.

Date. 11.7.85.

UDC 669.14 - 418.2 - 122.2:006.354 Group B34 (V34)

USSR STATE STANDARD

Cold-rolled Strips out of Corrosion - resistant and Heat - resistant Steel

GOST 4986-79
This supersedes
GOST 4986-70

The present standard relates to cold-rolled strips in rolls made out of high-alloy, corrosion-resistant and heat-resistant steel of the following grades:

1)	20Х13	20Kh13	20Cr13	
2)	30Х13	30Kh13	30Cr13	
3)	12Х13	12Kh13	12Cr13	
4)	20Х13Н4Г9	20Kh13N4G9	20Cr13Ni4Mn9	
5)	09Х15Н8Ю	09Kh15N8Yu	09Cr15Ni8Al	
6)	08Х17Н5М3	08Kh17N5M3	08Cr17Ni5Mo3	
7)	12Х21Н5Т	12Kh21N5T	12Cr21Ni5Ti	
8)	15Х18Н12С4ТЮ	15Kh18N12S4TYu	15Cr18Ni12Si4TiAl	
9)	12Х17Г9АН4	12Kh17G9AN4	12Cr17Mn9ANi4	
10)	10Х17Н13М2Т	10Kh17N13M2T	10Cr17Ni13Mo2Ti	
11)	10Х17Н13М3Т	10Kh17N13M3T	10Cr17Ni13Mo3Ti	
12)	12Х18Н9	12Kh18N9	12Cr18Ni9	
13)	17Х18Н9	17Kh18N9	17Cr18Ni9	
14)	08Х18Н10	08Kh18N10	08Cr18Ni10	
15)	08Х18Н10Т	08Kh18N10T	08Cr18Ni10Ti	
16)	12Х18Н10Т	12Kh18N10T	12Cr18Ni10T	
17)	12Х18Н10Е	12Kh18N10E	12Cr18Ni10E	
18)	03Х18Н12-ВИ	03Kh18N12-VI	03Cr18Ni12-VI	(VI for vacuum induction process)
19)	20Х23Н18	20Kh23N18	20Cr23Ni18	

20)	12Х25Н16Г7АР	12Kh25N16G7AR	12Cr25Ni16Mn7AR
21)	06ХН28МДТ	06KhN28MDT	06CrNi28MoDTi

The strips have thickness ranging from 0.05 to 2.0 mm and width from 6 to 410 mm.

1. CLASSIFICATION

1.1. Strips are subdivided as follows:

WITH RESPECT TO PROCESSING

soft - M,

semicold-worked - ПН (PN),

cold-worked Н (N),

highly cold-worked - ВН (VN),

WITH RESPECT TO SURFACE QUALITY

first group - 1,

second group - 2,

third group - 3.

WITH RESPECT TO MANUFACTURING ACCURACY

high accuracy - ВТ (VT),

increased accuracy - ПТ (PT),

normal accuracy - НТ (NT);

Page 2

WITH RESPECT TO TYPE OF EDGES

untrimmed - НО (NO)

trimmed - О

2. ASSORTMENT

2.1. Strip thickness and limit deviations in thickness must conform to the values shown in Table 1.

Table 1

mm

Strip thickness	Limit deviations		
	High accuracy ВТ (VT)	Increased accuracy П Т (PT)	Normal accuracy НТ (NT)
0.05 0.08	-0.010	-0.015	-0.02
0.010 0.12 0.15	-0.015	-0.02	-0.03
		-0.03	-0.04
0.20 0.25	-0.02		-0.05
0.30	-0.03		
0.35 0.40 0.45	-	-0.04	-0.06
0.50 0.55 0.60 0.65	-	-0.05	-0.07
0.70 0.75 0.80 0.90	-	-0.06	-0.08
1.00 1.10 1.20 1.30	-	-0.08	-0.10
1.40 1.50 1.60	-	-0.10	-0.12
1.70 1.80	-	-0.13	-0.15
1.90 2.00	-	-0.16	-0.18

Note: 1. Strip may, by mutual co nsent between manufacturer and customer, be manufactured with two-sided limit deviations in thickness, maintaining the tolerance zone.

2. Strip may, by mutual consent, be manufactured to intermediate thicknesses with limit deviations as applicable to the nearest higher thickness listed in the Table.

3. Soft strip of the third group is manufactured to thickness 0.10 mm and above.

2.2. Strip is manufactured in the form of rolls with or without welded joints. The length of the strip must be not less than 10 metres. Strip may be made to lengths ranging from 1.5 to 10 metres but such short length strip must not exceed 10% of a batch by weight.

Welded joints in strip should be not less than 4 metres apart and in the case of strip of thickness 1.5 to 2.0 mm, not less than 3 metres apart.

The welded joints should be marked. They are marked on one side only if the strip is of thickness 0.3 mm or less.

2.3. Strip is manufactured in width ranging from 10 to 410 mm in steps of 5 mm.

Strip of thickness upto 1.0 mm and width upto 100 mm is manufactured in closer steps of width but not less than 1 mm.

Trimmed strip of width 6.0 to 10.0 mm is manufactured at customer's request.

2.4. Width of trimmed strip and limit deviations in width for various thicknesses are shown in Table 2.

Table 2

Strip width	Limit deviations in width for strip thickness		
	from 0.05 to 0.5 incl.	0.5 upto 1.0 incl.	over 1.0 upto 2.0 incl.
From 6 upto 100 incl.	-0.3	-0.4	-0.6
Over 100 upto 300 incl.	-0.5	-0.6	-0.8
Over 300 upto 410 incl.	-0.6	-0.8	-1.0

Note: 1. Strip may, by mutual consent between manufacturer and customer, be manufactured with two-sided limit deviations in width, maintaining the tolerance zone.

2.5. Limit deviations in width for untrimmed strip should conform to Table 3.

Table 3

mm

Strip width	Limit deviations in width
upto.125 incl.	+1.9 -2.5
over 125 to 250 incl.	+3.1 -4.0
over 250	-10.0

Page 4

2.6. Strip is manufactured, at customer's request, with curvature per metre of length not exceeding:

3 mm - for strip of width upto 50 mm and

2 mm - for strip of width over 50 mm.

2.7. Unevenness per metre of length must not exceed;

3 mm - for strip of width less than 50 mm;

5 mm - for strip of width over 50 upto 190 mm and

10 mm - for strip of width over 190 mm.

Unevenness in the manufacture of soft strip of thickness 0.2 mm and less and of width over 190 mm, without dressing, must not exceed 15 mm.

Note: Uniform longitudinal bend is acceptable.

2.8. Inside diameter of rolls for strip of thickness 0.2 mm and over ranges from 150 to 600 mm and for strip of thickness less than 0.2 mm it is not more than 400 mm.

If the customer so desires, strip is manufactured to a specified inside diameter of roll.

EXAMPLES OF CONVENTIONAL DESIGNATIONS

Cold-rolled strip made out of 12X13 (12Cr13) grade steel, soft, made to normal manufacturing accuracy, belonging to the third group of surface quality, trimmed, having thickness 0.5 mm and width 100 mm.

Strip 12 X 13 - M - HT - 3 - 0.5 X 100 GOST 4986-79
(12Kh13) (NT)

Cold-rolled strip made out of 12 X 18H9 (12Cr18Ni9) grade steel semicold-worked, made to increased manufacturing accuracy belonging to the second group of surface quality, untrimmed and having thickness 0.2 mm and width 400 mm.

Strip 12 X 18H9 - ПН - П - 2 - НО - 0.2 X 400 GOST 4986-79
(12Kh18N9) PN P (NO)

3. TECHNICAL REQUIREMENTS

3.1. Cold-rolled strip made out of corrosion-resistant and heat-resistant steel must be manufactured in conformity with the requirements of the present standard.

3.2. Chemical composition of steel must conform to GOST 5632-72. If the customer so desires, residual titanium in steel of grades 08 X 18H10 (08Cr18Ni10) and 12 X 18H9 (12Cr18Ni9) must be restricted to 0.2% by weight or less.

3.3. Steel of grade 03 X 18 12-ВИ must have oxygen content not exceeding 0.006%, nitrogen not exceeding 0.03% and copper not exceeding 0.2% by weight.

3.4. Mechanical properties of soft strip must conform to those shown in Table 4.

Table 4

Steel grade (Russian)	Steel grade (English)	Heat treament schedule	Mechanical properties	
			Ultimate strength σ_B, MPa (kgf/mm^2)	Relative elongation δ_4, %
			Not less than	
12 X 13 20 X 13 30 X 13	12 Cr 13 20 Cr 13 30 Cr 13	Annealing or tempering at 740° to 800°C.	400 (40) 500 (50) 500 (50)	17 16 15
20 X 13H4Г9	20Cr13NC4Mn9	Hardening at 1050 to 1080°C, cooling in water or air.	600 (60)	35
09 X 15H8Ю	09Cr15Ni8Al	Normalizing at 1030 to 1070°C	Max. 1150(115)	15
		* Normalizing at 975 to 1000°C, cold working at - 70°C, holding time 2 hours tempering at 400 to 500°C, holding time 1 hour.	1200(120)	5
08 X 17H5M3	08Cr17Ni5Mo3	Normalizing at 1050 ± 20°C	Max. 1150(115)	16
		* Normalizing at 950 ± 10°C, cold working at -70°C, holding time 2 hours, tempering at 450 ± 10°C, holding time 1 hour.	1200(120)	6
12 X 21H5T	12Cr21Ni5To	Hardening at 950 to 1050°C, cooling in water or in air.	700 (70)	15
15 X 18H12C4TЮ	15Cr18Ni12Si4TiAl	Hardening at 1020 to 1050°C, cooling in water.	700 (70)	25

Table 4 Contd.

Steel grade (Russian)	Steel grade (English)	Heat treament schedule	Mechanical properties	
			Ultimate strength σ_B, MPa(kgf/mm^2)	Relative elongation δ_4,%
			Not less than	
12Х17Г9АН4	12Cr17Mn9ANi4	Hardening at 1050 to 1080°C, cooling in water or air.	650 (65)	40
10Х17Н13М2Т	10Cr17Ni13Mo2Ti		540 (54)	40
10Х17Н13М3Т	10Cr17Ni13Mo3Ti		540 (54)	40
12Х18Н9	12Cr18Ni9		540 (54)	35
17Х18Н9	17Cr18Ni9		580 (58)	34
08Х18Н10	08Cr18Ni10		540 (54)	40
08Х18Н10Т	08Cr18Ni10Ti		540 (54)	35
12Х18Н10Т	12Cr18Ni10T		540 (54)	40
12Х18Н10Е	12Cr18Ni10E		Not more than 75	35
03Х18Н12-ВИ	03Cr18Ni12-VI		400 (40)	40
20Х23Н18	20Cr23Ni18		580 (58)	38
12Х25Н16Г7АР	12Cr25Ni16Mn7AR	Hardening at 1050 to 1100°C, cooling in water or air.	700 (70)	30
06ХН28МДТ	06CrNi28MoDTi	Hardening at 930 to 1050°C, cooling in water or air.	560 (56)	25

* Mechmacial properties are determined on heat treated specimens.

Note:

1. The recommended heat treatment schedule, adopted by th e manufacturer, has been shown in the Table.

2. Deviation from the norm for relative elongation, defined in consultation with the customer, is permissible in the case of strip of thickness less than 0.2 mm.

3. Relative elongation may be reduced by 2%, with the customer's consent, in the case of strip of thickness 0.5 mm and less, made out of grade 12 X 13 (12Cr13) steel.

4. Relative elongation may be reduced by upto 5% upto 01.01.1981 in the case of strip after bright annealing, except for strip manufactured for the organisations of the ministry of electronic industry.

5. Ultimate strength may go upto 1200 MPa (120 kgf/mm^2), with the customer's consent, upto 01.01.1981, in the case of strip made out of 08X17H5M3 (08Cr17Ni5Mo3) grade steel.

Page 7

3.5. Mechanical properties of semicold-worked, cold-worked and highly cold-worked strip must corform to the values shown in Table 5.

Table 5

Steel grade (Russian)	Steel grade (English)	Kind of processing	Mechanical properties	
			Ultimate strength σ_B, MPa kgf/mm^2	Relative elongation δ_4,%
			Not less than	
20Х13Н4Г9	20Cr13Ni4Mn9	Semi cold-worked (ПН) (PN)	800 (80)	16
		Cold-worked (Н) (N)	1000 (100)	10
		Highly cold worked (ВН) (VN)	1150 (115)	6
09Х15Н8Ю	09Cr15Ni4Mn9	Semicold-worked (ПН) (PN)	1000 (100)	6
		Cold-worked (Н) (N)	1300 (130)	4
15Х18Н12С4Т	15Cr18Ni12Si4TiAl	Cold-worked (Н) (N)	850(1000) (85-110)	10
08Х17Н5М3	08Cr17Ni5Mo3	Semicold-worked (ПН) (PN)	1150 (115)	16
		Cold-worked (Н) (N)	1250 (125)	14
12Х17Г9АН4	12Cr17Mn9ANi4	Semicold-worked (ПН) (PN)	830 - 1000 (83-100)	30
		Cold worked (Н) (N)	1000 (100)	
		Highly cold worked (ВН) (VN)	1200 (120)	
12Х18Н9	12Cr18Ni9	Semicold-worked (ПН) (PN)	800 - (80)	15
		Cold-worked (Н) (N)	1000 (100)	5
		Highly cold-worked (ВН) (VN)	1150 (115)	3
17Х18Н9	17Cr18Ni9	Semicold-worked (ПН) (PN)	800 (80)	15
		Cold-worked (Н) (N)	1000 (100)	5
		Highly cold-worked (ВН) (VN)	1150 (115)	3
08Х18Н10	08Cr18Ni10	Semicold-worked (ПН) (PN)	750 (75)	12
03Х18Н12-ВИ	03Cr18Ni12-VI	Semicold-worked (ПН) (PN)	750 (75)	5

Note:

1. Mechanical properties are determined on specimens heat treated to the following schedules:

   - Tempering at 480 ± 10°C, holding for 1 hour - for 09XH15БЮ grade steel and

   - Tempering at 450 ± 10°C, holding for 1 hour-for 08X17H5M3 grade Steel.

2. Norms of mechanical properties for grades of steel not shown in the Table are defined with the customer's concurrence.

3. Deviation from the norm for relative elongation to the extent defined with the customer's concurrence is permitted in the case of strip of thickness 0.2 mm and less.

4. Cold-worked and highly cold-worked strip may, with the customer's concurrence, have an ultimate strength short of the values shown in Table 5 by 50 MPa (5 kgf/mm^2).

5. A reduction in ultimate strength by 30 MPa (3 kgf/mm^2) is permitted, with customer's concurrence, for semicold-worked strip, provided relative elongation has gone up by at least 3.

6. Highly cold-worked strip made out of steel of grade 12X18H9 (12Cr18Ni9) is manufactured with 1200 MPa (120 kgf/mm^2) as the limit of ultimate strength and without standardising elongation and double bending strength.

Table 6

Surface group	Kind of processing.	R_a	Description of surface	Nature of permissible defects on surface of strip		Maximum depth at which the defect occurs
				Face	Reverse	
1.	Semicold-worked, cold-worked and highly cold-worked	0.63	Lustrous without waviness and	Not more than 2 scratches upto 100 mm long each per 4 m of length; 4 dents of total area upto 20 mm^2 per 4 m of length.	Same as on face; No more than four oblique dressings.	One half of limit deviation in thickness
2.	Semicold-worked, cold-worked and highly cold-worked	1.25	Lustrous without waviness and traces of over-etching with minor differences in shades.	No more than four scratches 150 mm long each and no more than six dents of total area upto 30 mm^2 and no more than six oblique dressings per 4 m of length.		
3.	Soft	Not standardised	Silver-matt or lustrous without rust or over-etching with minor differences in shades	Individual minor scratches, impressions, dents, and oblique dressings, waviness and traces of abrasive dressing are permitted		

R_a - Surface finish parameter as per GOST 2789-73, in microns , per basic length 0.8 mm, not more than.

Note:

1. Soft strip out of steel of grades 12X13, 20X13, 30X13, 12X21H5T, 08X17H5M3, 20X13H4Г9, 09X15НЮ, 12Х17Г9АН4, 10X17H13M2T, 20X23H18, 15X18H12C4TЮ, 10X17H13M3T, 06XH28MДT, 12X25H16Г7AP in the etched condition may have a matt surface of green colour with different shades.

2. Surface quality of soft strip may be defined with reference to master specimens agreed upon with the customer.

3. If the customer so desires, strip is manufactured without dressing and without cutting out inaccessible defective portions. In this case, the defective portions are circled with a pencil and their weight is deducted from the total weight of the roll. Defects on strip of all surface groups are dressed with fine-grained abrasive or by applying heat.

4. Surface finish of dressed portions must be:
Ra not more than 2.5 microns over a basic length of 0.8 mm for the first group and
R_z not more than 20 microns over a basic length of 2.5 mm for the second group.

Page 9

3.6. Strip must withstand the following number of double bends without developing cracks or tears and without peeling off into layers or breaking:

2 - for cold-worked and semicold-worked strip of thickness 0.2 mm and over;

3 - for cold-worked and semicold-worked strip of thickness less than 0.2 mm.

5 - for cold-worked steel of grade 15X18H12C4T (15Cr18Ni12Si-4TiAl) and

7 - for soft steel of grade 15X18H12C4TЮ (15Cr18Ni12Si4TiAl).

If the customer so desires, the number of double bends for cold worked strip made out of steel of grade 12X18H10T (12Cr18Ni10Ti) should be not less than three.

3.7. Strip must conform to the requirements set out in Table 6, in respect of appearance and quality of surface.

3.8. Edges of trimmed strip must be free from cracks, notches tears and peeling. Burrs not exceeding the limit deviations in thickness of strip are permitted.

Tears, no deeper than the limit deviation in width, are permitted in the edges of untrimmed strip. Edges may not be uniformly rounded off and may be uneven.

3.9. Steel of the following grades must not be prone to intercrystalline corrosion. 20Х13Н4Г9 (20Cr13Ni4Mn9), 12Х17Г9АН4, (12Cr17Mn9ANi4), 10Х17Н13М2Т (10Cr17Ni13Mo2Ti), 12Х18Н9 (12Cr18Ni9) 10Х17Н13М3Т (10Cr17Ni13Mo3Ti), 08Х18Н10 (08Cr18Ni10), 08Х18Н10Т (08Cr18Ni10Ti), 12Х18Н10Т (12Cr18Ni10T), 12Х18Н10Е (12Cr18Ni10E) 03Х18Н12-ВИ (03Cr18Ni12-VI), 06ХН28МДТ (06Kh28MDT)

3.10. Peeling is not allowed in strip steel.

3.11. Strip steel is manufactured to the following specifications at customer's request as in 3.11.1 to 3.11.5.

3.11.1. As soft strip made out of 03Х18Н12-ВИ (03Cr18Ni12-VI) grade steel with norms for depth of drawing spherical indentation as indicated in Table 7.

Table 7.

mm

Strip thickness	Depth of drawing not less than
0.20	8.0
0.25	8.5
0.30	9.0
0.40	9.5
0.70	10.0

3.11.2. As soft strip made out of 12Х13, 20Х13 and 30Х13 (30Cr13) grades of steel, with bend test till the two sides becomes parallel,

around a mandrel of the same thickness as the strip.

3.11.3. With standardised proneness to embrittlement, in the case of 12X21H5T (12Cr21Ni5Ti) grade steel. Increase in ultimate strength after induced heating (to the schedule: heat upto 550°C, hold for 1 hour, cool in furnace at the rate of 100°C per hour down to 300°C, cool further in air) should not exceed 50% of the ultimate strength of soft strip.

3.11.4. - With polished or ground surface

3.11.5. - Without standardised mechanical properties.

4. ACCEPTANCE RULES

4.1. Strip is accepted in batches. A batch should consist of metal from a single melt, metal of a single kind of processing, a single thickness, a single surface finish group and a single type of edge. In the case of soft metal the batch must further consist of metal from a single charge for the furnace and of a single heat treatment schedule.

A batch may, with the customer's concurrence, consist of metal of the same grade but from different melts.

4.2. The sampling scale for checking quality of strip steel from a batch is:

i) every roll - for inspection of surface, shape and dimensions.

ii) as per GOST 7565-73 - for chemical analysis;

iii) three samples from a melt - for determining the proportion of gases by weight and

iv) one roll from a batch for tensile test, embrittlement test, bend test, double-bend test. Erichsen test (drawing a spherical indentation), surface finish determination and test for proneness to intercrystalline corrosion.

Note: The manufacturer checks surface finish of strip and of dressed portions, double-bends, curvature and unevenness periodically but not less frequently than once a month on at least two rolls.

4.4. If unsatisfactory test results are obtained against even a single parameter, the particular test is repeated on twice the number of samples. Results of retesting are applicable to the whole batch.

5. METHODS OF TESTING

5.1. The quality certificate issued by the factory producing the metal must certify the chemical composition of steel in the strip as also the oxygen, nitrogen, and hydrogen content in steel of grade 03Х18Н12-ВИ (03Cr18Ni12-VI).
(03Kh18N12-VI)

Chemical analysis, if necessary, is carried out in accordance with GOST 20560-75, GOST 1234-78, GOST 12345-66, GOST 12346-78, GOST 12347-77, GOST 12348-78, GOST 12349-66, GOST 12350-78, GOST 12351-66, GOST 12352-66, GOST 12353-78, GOST 12354-66, GOST 12355-78, GOST 12356-66, GOST 12365-66.

The proportion of gases is determined in accordance with GOST 17745-72.

5.2. Dimensional checks are carried out using measuring aids of appropriate accuracy.

Page 11

Thickness of untrimmed strip is measured at a distance not less than 10 mm from the edge and that of trimmed strip at not less than 5 mm, from the edge.

If the thickness of the strip is 15 mm or less, thickness is measured at the centre.

5.3. Unevenness and curvature are checked at any portion of the strip while unwinding the roll or on a piece of strip 1 to 1.5 m long cut from the end of the roll.

5.4. Uneveness is measured on an inspection surface plate by measuring the maximum height of deviation in the strip from the surface plate.

5.5. Curvature in strip is measured by placing the portion of the strip under test on a flat surface, holding a one-metre ruler against the curved surface and measuring the distance of the point of the arc formed by the strip farthest from the ruler.

5.6. The quality of the surface of strip is checked visually without using any magnification devices.

5.7. One specimen from the two ends of each selected roll is taken for carrying out tensile test, embrittlement test, bend test, double-bend test, surface quality test, test for intercrystalline corrosion and deep drawing test (Erichsen test).

5.8. Mechanical properties are determined on specimens cut along the direction of rolling. Tensile test on all grades of steel is carried out in accordance with GOST 11701-66 on short specimens.

If unsatisfactory results are obtained in respect of relative elongation δ_4 for steel of grades 08X17H5M3 (08Cr17Ni5Mo3) and 12X21H5T (12Cr21Ni5Ti) (upto 01.01.1981), the test is repeated on long specimens in accordance with GOST 1497-73. Relative elongation δ_{10} must then conform to the norms shown in Table 8. Results of retesting are applicable to the whole batch.

Table 8

Steel grade	Kind of processing	Relative elongation δ_{10}, %, not less than
08X17H5M3 (08Cr17Ni5Mo3)	Soft	15
	Semicold-worked	10
	Cold-worked	7
	Heat-treated control specimens	9
12X21H5T (12Cr21Ni5Ti)	Soft	20

5.9. Bend test is carried out on longitudinal specimens of strip in accordance with GOST 14019-68.

5.10. Erichsen test is carried out in accordance with GOST 10510-74. The depth of drawing of the spherical indentation is determined using a 20 mm diameter punch on specimens 70 to 90 mm wide.

5.11. Double-bend test is carried out on transverse specimens with rounding off radius of jaw equal to five times the thickness, in accordance with GOST 13813-68.

5.12. Surface finish is checked by means of profilometer, profilograph, optical instruments or with reference to working specimens in accordance with the requirements of GOST 2789-73.

5.13. Proneness to intercrystalline corrosion is tested in accordance with GOST 6032-75.

The manufacturer chooses the method of testing.

Steel of grade 20X13H4Г9 (20Cr13Ni4Mn9) is tested either by the method given in GOST 6032-75 or by the method given in the mandatory annexure.

5.14. The manufacturer decides the frequency of embrittlement tests on 12X21H5T (12Cr21Ni5Ti) grade steel.

5.15. Statistical and nondestructive testing methods, approved in the established manner may be adopted.

6. PACKING, MARKING, TRANSPORT AND STORAGE

6.1. Marking and packing of strip and formulation of documents must conform to GOST 7566-69.

6.2. A roll may consist of several strips. The joints must be clearly marked with inserts.

6.3. Rolls of strip of thickness 0.3 mm and less are packed in wooden boxes. Rolls are wrapped in moisture-proof paper at customer's request.

Soft material, protecting the edge of the strip from deformation is packed between the face of the rolls and the walls of the boxes.

Rolls of strip over 0.3 mm thick are packed in soft material, such as, sack cloth, packing cloth, tissue paper etc. A layer of paper may be inserted between the turns of the roll at customer's request.

Rolls of strip over 0.3 mm thick are packed in wooden boxes at customer's request.

6.4. The largest single case packed for mechanized handling should not exceed 5 tons. For manual handling it should not exceed 80 kg.

6.5. Strip may be carried by any form of transport ensuring safety of the strip.

6.6. Strip must be stored in enclosed stores premises under conditions which afford protection against contamination and mechanical damage.

ANNEXURE
MANDATORY

METHOD A-OF TESTING FOR INTERCRYSTALLINE CORROSION

The test solution must contain 110 grams of copper sulphate conforming to GOST 4165-78, 55 ml. of sulphuric acid of specific gravity 1.835 grams per c.c. to GOST 4204-77 and 100 ml of water.

The test is carried out in a flask fitted with a reflux cooling coil. Beads, cut out of glass tubes or rods or glass wool

are placed on the bottom of the flask and the specimens are then loaded in the flask. The specimens may be arranged in several layers interleaved with beads, glass tubes or rods or glass wool between layers.

The flask is filled such that the specimens are completely covered with the solution and do not come into contact with each other. The liquid is boiled without interruption but the cooling coil is not allowed to get heated. In the event of unavoidable interruption to the test, the specimens are not taken out of the reaction vessel.

If the colour changes, the solution is replaced with a freshly prepared solution, the total number of hours of boiling is taken as the duration of the test.

The number of specimens to be placed in the flask is reckoned on the basis of at least 3 ml of solution per square centimeter of specimen surface.

The specimens should be boiled for 24 hours.

After the test, the specimens are washed and dried and then subjected to bend test over an angle of 90°.

GOST 6032-75 defines the other conditions of bend test.

BASE SI UNITS

Quantity	Unit		
	Name	Russian symbol	International symbol
Length	metre	м	m
Weight (Mass)	Kilogram	кг	kg
Time	second	с	s
Current	ampere	А	A
Thermodynamic temperature	kelvin	К	K
Amount of substance	mole	моль	mol
Intensity of light	candela	кд	cd

SUPPLEMENTARY SI UNITS

Plane angle	radian	рад	rad
Solid angle	steradian	ср	sr

DERIVED SI UNITS WITH PROPRIETORY NAMES

Quantity	Unit		Expression for derived unit	
	Name	Symbol	using other units	using base SI units
Frequency	hertz	Hz	-	s^{-1}
Force	newton	N	-	$m, kg. s^{-2}$
Pressure	pascal	Pa	N/m^2	$m^{-1}, kg. s^{-2}$
Energy, work, heat	joule	J	N.m	$m^2, kg. s^{-2}$
Power, energy, flow	watt	W	J/c	$m^2, kg. s^{-3}$
Quantity of electricity, electric charge	coulomb	C	A.s	s.A
Electric potential	volt	V	W/A	$m^2, kg. s^{-3}$
Electric capacitance	farad	F	c/V	m^{-2}, kg^{-1}, s^4
Electric resistance	ohm		V/A	$m^2, kg. s^{-3}$
Conductance	siemens	S	A/V	m^{-2}, kg^{-1}, s^3
Magnetic flux	weber	Wb	V.s	$m^2, kg. s^{-2}$
Magnetic induction	tesla	T	Wb/m^2	$kg. s^{-2}.A^{-1}$
Inductance	henry	H	Wb/A	$m^2, kg. s^{-2}$
Luminous flux	lumen	lm	-	cd.sr. *
Illumination	lux	lx	-	m^{-2}.cd.sr.*
Nucleid activity	beckerel	bk	-	s^{-1}
Radiation dosage	grey	gr	-	m^2, s^{-2}

* The supplementary unit steradian figures along with base SI units in these two expressions.