NATIONAL STANDARD OF
THE PEOPLE'S REPUBLIC OF CHINA

中华人民共和国国家标准

GB/T 3621—2022

(replacing GB/T 3621—2007)

Titanium and titanium alloy plate and sheet

钛及钛合金板材

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1—2020 "Directives for standardization — Part 1: Structure and drafting rules for standardization documents".

This document replaces GB/T 3621—2007 "Titanium and titanium alloy plate and sheet". Compared with GB/T 3621—2007, apart from structural adjustments and editorial changes, the main technical changes are as follows:

a) a requirement for the recommended nominal dimensions of the products was added (see 4.1.2);

b) the technical requirements for TA1, TA2 and TA3 products were changed, and TA4 was deleted (see Table 1, Table 5 and Table 7; Table 1, Table 5 and Table 7 of the 2007 edition);

c) the technical requirements for TA0, TA1G, TA1GELI, TA2G, TA3G, TA4G, TA22, TA23, TA24, TA32 and TC20 products were added (see Table 1, Table 5 and Table 7);

d) the specification ranges of the products were changed (see Table 1; Table 1 of the 2007 edition);

e) the requirements for the permissible deviations of the dimensions of plate and sheet were changed (see Table 2, Table 3 and Table 4; Table 2, Table 3 and Table 4 of the 2007 edition);

f) the requirements for the mechanical properties and bend properties were changed (see Table 5, Table 6 and Table 7; Table 5, Table 6 and Table 7 of the 2007 edition);

g) a requirement for the β transus temperature was added (see 5.5);

h) the requirements for the visual quality were changed (see 5.6; 3.6 of the 2007 edition);

i) the analysis methods of the chemical composition were changed (see 6.1; 4.1 of the 2007 edition);

j) the test method of the room-temperature tensile properties was changed (see 6.3.1; 4.3.1 of the 2007 edition);

k) the test method of the elevated-temperature tensile properties was changed (see 6.3.2; 4.3.2 of the 2007 edition);

l) the requirements for the bend test piece were changed (see 6.4; 4.4 of the 2007 edition);

m) the inspection and acceptance requirements were changed (see 7.1; 5.1 of the 2007 edition).

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not bear the responsibility of identifying patents.

This document was proposed by the China Nonferrous Metals Industry Association.

This document is under the jurisdiction of the National Nonferrous Metals Standardization Technical Committee (SAC/TC 243).

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This document was first issued in 1983, first revised in 1994, second revised in 2007, and this is the third revision.

1 Scope

This document specifies the classification and marking, technical requirements, test methods, inspection rules, marking, packaging, transport, storage, accompanying documents and contents of the purchase order for titanium and titanium alloy plate and sheet (hereinafter referred to as "plate and sheet").

This document applies to plate and sheet produced by the rolling method.

2 Normative References

The following documents contain provisions which, through normative reference in this document, constitute indispensable provisions of this document. For dated references, only the edition corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

Standard No.	Title
GB/T 228.1—2021	Metallic materials — Tensile testing — Part 1: Method of test at room temperature
GB/T 228.2	Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature
GB/T 232	Metallic materials — Bend test method
GB/T 2039	Metallic materials — Uniaxial creep testing method in tension
GB/T 3620.1	Designation and composition of titanium and titanium alloys
GB/T 3620.2	Permissible deviations in chemical composition for wrought titanium and titanium alloy products
GB/T 4698 (all parts)	Methods for chemical analysis of titanium sponge, titanium and titanium alloys
GB/T 6611	Terms and metallographs of titanium and titanium alloys
GB/T 8180	Packaging, marking, transport and storage of wrought titanium and titanium alloy products
GB/T 23605	Determination of β transus temperature for titanium alloys
GB/T 38982	Testing methods for shape dimensions of wrought titanium and titanium alloy products
YS/T 1262	Methods for chemical analysis of titanium sponge, titanium and titanium alloys — Determination of multi-element content — Inductively coupled plasma atomic emission spectrometry

3 Terms and Definitions

The terms and definitions given in GB/T 6611 and GB/T 38982 apply to this document.

4 Classification and Marking

4.1 Product Classification

4.1.1

The designations, conditions and specifications of the products shall conform to the provisions of Table 1.

4.1.2

The nominal dimensions of plate and sheet shall be within the ranges specified in Table 1. It is recommended that, for plate and sheet with a thickness of not greater than 5.0 mm, the nominal thickness be an integral multiple of 0.1 mm; for plate and sheet with a thickness greater than 5.0 mm, the nominal thickness be an integral multiple of 0.5 mm; the nominal width of plate and sheet be an integral multiple of 10 mm; and the nominal length be an integral multiple of 50 mm.

Table 1 — Designations, conditions and specifications

Designation	Condition	Specification/ mm		
		Thickness	Width	Length
TA0, TA1, TA2, TA3, TA1GELI, TA1G, TA2G, TA3G, TA4G, TA5, TA6, TA7, TA8, TA8-1, TA9, TA9-1, TA10, TA11, TA13, TA15, TA17, TA18, TA22, TA23, TA24, TA32, TC1, TC2, TC3, TC4, TC4ELI, TC20	Annealed (M)	0.3~5.0	400~1 800	1 000~4 000
		＞5.0~100.0	400~3 000	1 000~6 000
TB2, TB5, TB6, TB8	Solution-treated (ST)	0.5~5.0	400~1 800	1 000~4 000
		＞5.0~100.0	400~3 000	1 000~6 000

4.2 Product Marking

The product marking shall be expressed in the order of product name, designation, condition, specification and number of this document.

Example 1: For plate manufactured from designation TA2, in the annealed condition, with a thickness of 1.0 mm, a width of 1 000 mm and a length of 2 000 mm, the marking is:

Plate TA2 M 1.0×1000×2000 GB/T 3621—2022

Example 2: For plate manufactured from designation TB2, in the solution-treated condition, with a thickness of 1.0 mm, a width of 1 000 mm and a length of 2 000 mm, the marking is:

Plate TB2 ST 1.0×1000×2000 GB/T 3621—2022

5 Technical Requirements

5.1 Chemical Composition

5.1.1

The chemical composition of plate and sheet shall conform to the provisions of GB/T 3620.1.

5.1.2

When the purchaser takes samples from the products for the re-verification of the chemical composition, the permissible deviations of the chemical composition shall conform to the provisions of GB/T 3620.2.

5.2 Shape Dimensions and Their Permissible Deviations

5.2.1

The permissible deviations of the thickness of plate and sheet shall conform to the provisions of Table 2.

Table 2 — Permissible deviations of thickness — Units in millimetres

Thickness	Permissible deviations of thickness for the specified width range[n]		
	400~1 000	＞1 000~2 000	＞2 000~3 000
0.3~0.5	±0.05	—	—
＞0.5~0.8	±0.07	±0.09	—
＞0.8~1.0	±0.09	±0.10	—
＞1.0~1.5	±0.11	±0.13	—
＞1.5~2.0	±0.15	±0.15	—
＞2.0~2.5	±0.18	±0.18	—
＞2.5~3.0	±0.18	±0.22	—
＞3.0~4.0	±0.22	±0.30	—
＞4.0~6.0	±0.35	±0.40	±0.80
＞6.0~8.0	±0.40	±0.60	±0.80
＞8.0~10.0	±0.50	±0.60	±0.80
＞10.0~15.0	±0.70	±0.80	±1.00
＞15.0~20.0	±0.70	±0.90	±1.10
＞20.0~30.0	±0.90	±1.00	±1.20
＞30.0~40.0	±1.10	±1.20	±1.50
＞40.0~50.0	±1.20	±1.50	±2.00
＞50.0~70.0	±1.60	±2.00	±2.50

Thickness	Permissible deviations of thickness for the specified width range[n]		
＞70.0~100.0	±2.00	±2.50	±2.50

*[n] When the purchaser requires the thickness permissible deviation to be a one-sided deviation of all "+" or all "−", the value shall be twice the corresponding value in the table.

5.2.2

The permissible deviations of the width and length of plate and sheet shall conform to the provisions of Table 3.

Table 3 — Permissible deviations of width and length — Units in millimetres

Thickness	Permissible deviation of width for the specified width range	Permissible deviation of length for the specified length range	
	400~3 000	1 000~4 000	＞4 000~6 000
0.3~5.0	+10 0	+10 0	—
＞ 5.0~100.0	+10 0	+10 0	+15 0

5.2.3

The flatness of plate and sheet shall conform to the provisions of Table 4.

Table 4 — Flatness — Units in millimetres

Thickness of plate and sheet	Flatness for the specified width range, not greater than, within every 1 000 mm		
	400~1 000	＞1 000~2 000	＞2 000~3 000
0.3~5.0	15	20	—
＞5.0~10.0	15	15	20
＞10.0~20.0	15	15	15
＞20.0~35.0	10	10	15
＞35.0~100.0	8	8	10

5.2.4

The corners of plate and sheet shall be cut at right angles, and shall be free from splits and curled edges, with slight burrs permitted; the skew of cutting shall not exceed the permissible deviations of the length and width of plate and sheet.

5.3 Mechanical Properties

5.3.1

The room-temperature tensile properties of plate and sheet shall conform to the provisions of Table 5. When the inspection of the longitudinal room-temperature tensile properties is not stated in the purchase order, only the transverse room-temperature tensile properties of plate and sheet shall be inspected; when agreed upon between the supplier and the purchaser and stated in the purchase order that the longitudinal room-temperature tensile properties shall be inspected, the longitudinal room-temperature tensile properties of plate and sheet may be inspected.

Table 5 — Room-temperature tensile properties

Designation	Condition	Thickness/ mm	Tensile strength Rm/MPa	0.2% proof strength (plastic extension) Rp0.2/MPa	Percentage elongation after fracture A/%
TA0	M	0.3~2.0	280~420	≥170	≥45
		>2.0~10.0	280~420	≥170	≥30
		>10.0~30.0	280~420	≥170	≥25
TA1	M	0.3~2.0	370~530	≥250	≥40
		>2.0~10.0	370~530	≥250	≥30
		>10.0~30.0	370~530	≥250	≥25
TA2	M	0.3~1.0	440~620	≥320	≥35
		>1.0~2.0	440~620	≥320	≥30
		>2.0~10.0	440~620	≥320	≥25
		>10.0~30.0	440~620	≥320	≥18
TA3	M	0.3~1.0	540~720	≥410	≥30
		>1.0~2.0	540~720	≥410	≥25
		>2.0~10.0	540~720	≥410	≥20
		>10.0~30.0	540~720	≥410	≥16
TA1GELI	M	0.3~50.0	≥200	≥140	≥30
TA1G	M	0.3~50.0	≥240	140~310	≥30
TA2G	M	0.3~50.0	≥400	275~450	≥25
TA3G	M	0.3~50.0	≥500	380~550	≥20
TA4G	M	0.3~50.0	≥580	485~655	≥20
TA5	M	0.5~1.0	≥685	≥585	≥20
		>1.0~2.0	≥685	≥585	≥15
		>2.0~10.0	≥685	≥585	≥12
TA6	M	0.8~1.5	685~850	≥605	≥20

Designation	Condition	Thickness/ mm	Tensile strength Rm/MPa	0.2% proof strength (plastic extension) Rp0.2/MPa	Percentage elongation after fracture A/%
		>1.5~2.0	685~850	≥605	≥15
		>2.0~25.0	685~850	≥605	≥12
TA7	M	0.8~1.5	765~930	≥685	≥20
		>1.5~2.0	765~930	≥685	≥15
		>2.0~10.0	765~930	≥685	≥12
		>10.0~30.0	730~900	≥660	≥9
TA8	M	0.3~25.0	≥400	275~450	≥20
TA8-1	M	0.3~25.0	≥240	140~310	≥24
TA9	M	0.3~25.0	≥400	275~450	≥20
TA9-1	M	0.3~25.0	≥240	140~310	≥24
TA10 (Class A)	M	0.3~25.0	≥485	≥345	≥18
TA10 (Class B)	M	0.3~25.0	≥345	≥275	≥25
TA11	M	5.0~12.0	≥895	≥825	≥10
TA13	M	0.5~2.0	540~770	460~570	≥18
TA15	M	0.8~1.8	930~1 130	≥855	≥12
		>1.8~4.0	930~1 130	≥855	≥10
		>4.0~10.0	930~1 130	≥855	≥8
		>10.0~70.0	930~1 130	≥855	≥6
TA17	M	0.5~1.0	685~835	—	≥25
		>1.0~2.0	685~835	—	≥15
		>2.0~4.0	685~835	—	≥12
		>4.0~10.0	685~835	—	≥10
TA18	M	0.5~2.0	590~735	—	≥25
		>2.0~4.0	590~735	—	≥20
		>4.0~10.0	590~735	—	≥15
TA22	M	4.0~30.0	≥635	≥490	≥18
TA23	M	1.0~10.0	≥700	≥590	≥18
TA24	M	8.0~90.0	≥700	≥550	≥13
TA32	M	0.8~4.0	≥900	≥800	≥8
TB2	ST	1.0~3.5	≤980	—	≥20

Designation	Condition	Thickness/ mm	Tensile strength Rm/MPa	0.2% proof strength (plastic extension) Rp0.2/MPa	Percentage elongation after fracture A/%
	STA*	1.0~3.5	≥1 320	—	≥8
TB5	ST	0.8~3.2	705~945	690~870	≥12
TB6	ST	1.0~5.0	≥1 000	—	≥6
TB8	ST	0.3~0.6	825~1 000	795~965	≥6
		>0.6~2.5	825~1 000	795~965	≥8
TC1	M	0.3~2.0	590~735	≥460	≥25
		>2.0~10.0	590~735	≥460	≥20
		>10.0~25.0	590~735	≥460	≥15
TC2	M	0.5~1.0	685~920	≥620	≥25
		＞1.0~2.0	685~920	≥620	≥15
		＞2.0~25.0	685~920	≥620	≥12
TC3	M	0.5~2.0	880~1 080	≥820	≥12
		＞2.0~10.0	880~1 080	≥820	≥10
TC4	M	0.5~4.0	925~1 150	≥870	≥12
		＞4.0~5.0	925~1 150	≥870	≥10
		＞5.0~10.0	895~1 100	≥825	≥10
		＞ 10.0~100.0	895~1 100	≥825	≥9
TC4ELI	M	0.5~＜25.5	≥895	≥830	≥10
		25.5~100.0	≥860	≥795	≥10
TC20	M	0.5~25.0	≥900	≥800	≥10

When not stated in the purchase order, TA10 plate and sheet shall be supplied according to Class A; when agreed upon between the supplier and the purchaser and stated in the purchase order, it may be supplied according to Class B.

NOTE 1: The room-temperature tensile properties apply to both the transverse and longitudinal directions of plate and sheet.

NOTE 2: The room-temperature tensile properties of TA10 plate and sheet are divided into Class A and Class B; Class A applies to general industry, and Class B applies to the cladding material used for clad plates.

*STA is the solution-treated and aged condition, applicable to the room-temperature tensile properties of TB2 test pieces in the solution-treated and aged condition.

5.3.2

When agreed upon between the supplier and the purchaser and stated in the purchase order, the elevated-temperature mechanical properties of plate and sheet shall conform to the provisions of Table 6.

Table 6 — Elevated-temperature mechanical properties

Designation	Thickness/ mm	Test temperature/ ℃	Tensile strength Rm/ MPa	Stress-rupture properties	
				Initial stress σ0/MPa	Creep rupture time tcr/h
TA6	0.8~25.0	350	≥420	390	≥100
		500	≥340	195	≥100
TA7	0.8~30.0	350	≥490	440	≥100
		500	≥440	195	≥100
TA11	5.0~12.0	425	≥620	—	—
TA15	0.8~＜30.0	500	≥635	470	≥50
		500	≥635	440	≥100
	30.0~70.0	500	≥570	470	≥50
		500	≥570	440	≥100
TA17	0.5~10.0	350	≥420	390	≥100
		400	≥390	360	≥100
TA18	0.5~10.0	350	≥340	320	≥100
		400	≥310	280	≥100
TA32	0.8~4.0	550	≥600	350	≥100
TC1	0.3~25.0	350	≥340	320	≥100
		400	≥310	295	≥100
TC2	0.5~25.0	350	≥420	390	≥100
		400	≥390	360	≥100
TC3	0.5~10.0	400	≥590	540	≥100
		500	≥440	195	≥100
TC4	0.5~30.0	400	≥590	540	≥100
		500	≥440	195	≥100

5.4 Bend Properties

Plate and sheet shall be subjected to the bend test, and there shall be no cracks at the bent portion. The diameter of the bending punch and the bending angle shall conform to the provisions of Table 7.

Table 7 — Bend properties

Designation	Thickness/mm	Diameter of the bending punch/mm	Bending angle/(°)
TA0	0.3~5.0	3T	≥140

Designation	Thickness/mm	Diameter of the bending punch/mm	Bending angle/(°)
TA1	0.3~2.0	3T	≥140
	>2.0~5.0	3T	≥130
TA2	0.3~2.0	3T	≥100
	>2.0~5.0	3T	≥90
TA3	0.3~2.0	3T	≥90
	>2.0~5.0	3T	≥80
TA1GELI	0.3~2.0	3T	≥105
	>2.0~5.0	4T	≥105
TA1G	0.3~2.0	3T	≥105
	>2.0~5.0	4T	≥105
TA2G	0.3~2.0	4T	≥105
	>2.0~5.0	5T	≥105
TA3G	0.3~2.0	4T	≥105
	>2.0~5.0	5T	≥105
TA4G	0.3~2.0	5T	≥105
	＞2.0~5.0	6T	≥105
TA5	0.5~40.0	5T	≥100
TA6	0.8~1.5	3T	≥50
	＞1.5~5.0	3T	≥40
TA7	0.8~2.0	3T	≥50
	＞2.0~5.0	3T	≥40
TA8	0.3~＜1.8	4T	≥105
	1.8~5.0	5T	≥105
TA8-1	0.3~＜1.8	3T	≥105
	1.8~5.0	4T	≥105
TA9	0.3~＜1.8	4T	≥105
	1.8~5.0	5T	≥105
TA9-1	0.3~＜1.8	3T	≥105
	1.8~5.0	4T	≥105
TA10	0.3~＜1.8	4T	≥105
	1.8~5.0	5T	≥105
TA13	0.5~2.0	2T	180

Designation	Thickness/mm	Diameter of the bending punch/mm	Bending angle/(°)
TA15	0.8~6.0	3T	≥30
TA17	0.5~1.0	3T	≥80
	＞1.0~2.0	3T	≥60
	＞2.0~5.0	3T	≥50
	＞5.0~25.0	6T	≥120
TA18	0.5~1.0	3T	≥100
	＞1.0~2.0	3T	≥70
	＞2.0~10.0	3T	≥60
TA22	4.0~16.0	3T	≥60
TA23	1.0~10.0	5T	180
TA24	8.0~48.0	5T	≥100
	＞48.0~90.0	5T	≥70
TA32	0.8~4.0	3T	≥25
TB2	1.0~3.5	3T	≥120
TB5	0.8~＜1.8	4T	≥105
	1.8~3.2	5T	≥105
TB8	0.8~＜1.8	3T	≥105
	1.8~2.5	3.5T	≥105
TC1	0.5~1.0	3T	≥100
	＞1.0~2.0	3T	≥70
	＞2.0~5.0	3T	≥60
TC2	0.5~1.0	3T	≥80
	＞1.0~2.0	3T	≥60
	＞2.0~5.0	3T	≥50
TC3	0.5~2.0	3T	≥35
	＞2.0~5.0	3T	≥30
TC4	0.5~1.8	9T	≥105
	＞1.8~5.0	10T	≥105
TC4ELI	0.5~1.8	9T	≥105
	＞1.8~5.0	10T	≥105
TC20	0.5~＜1.8	9T	≥105
	1.8~5.0	10T	≥105

NOTE 1: T is the thickness of the bend test piece.

NOTE 2: The bend properties of TB2, TB5 and TB8 apply only to test pieces in the solution-treated condition.

5.5 β Transus Temperature

When required by the purchaser and stated in the purchase order, the measured values of the β transus temperature may be provided for plate and sheet according to the melting furnace number.

5.6 Visual Quality

5.6.1

Plate and sheet shall be supplied with a pickled, water-ground, sand-blasted or machined surface.

5.6.2

The surface of plate and sheet shall be clean and smooth. Local defects on the surface may be removed by grinding, provided that after removal the minimum permissible thickness of plate and sheet is ensured.

5.6.3

When local defects on the surface are removed, the grinding shall be carried out along the rolling direction; after grinding, plate and sheet shall be treated by pickling, water-grinding, sand-blasting or machining so that the gloss and roughness of the surface tend to be uniform.

6 Test Methods

6.1 Chemical Composition

The chemical composition analysis of the products shall be carried out in accordance with the provisions of GB/T 4698 (all parts) or YS/T 1262. The arbitration analysis shall be carried out in accordance with the provisions of GB/T 4698 (all parts).

6.2 Shape Dimensions and Their Permissible Deviations

The measurement of the shape dimensions and their permissible deviations of the products shall be carried out in accordance with the provisions of GB/T 38982, of which the thickness permissible deviation shall be measured at positions not less than 100 mm from the corner and not less than 10 mm from the edge.

6.3 Mechanical Properties

6.3.1

The inspection of the room-temperature tensile properties of the products shall be carried out in accordance with the provisions of GB/T 228.1—2021. The P1 test piece shall be taken for plate and sheet with a thickness of less than 3.0 mm; the P7 test piece for plate and sheet with a thickness of 3.0 mm~6.0 mm; the P7 or R8 test piece for plate and sheet with a thickness greater than 6.0 mm and up to 10.0 mm; and the P7 or R7 test piece for plate and sheet with a thickness greater than 10.0 mm.

6.3.2

The inspection of the elevated-temperature tensile properties of the products shall be carried out in accordance with the provisions of GB/T 228.2.

6.3.3

The inspection of the elevated-temperature stress-rupture properties of the products shall be carried out in accordance with the provisions of GB/T 2039. During the inspection, the stress-rupture properties of TA15 plate and sheet shall be inspected with a test time of 50 h, and the arbitration inspection shall be carried out with a test time of 100 h.

6.4 Bend Properties

The inspection of the bend properties of the products shall be carried out in accordance with the provisions of GB/T 232. For plate and sheet with a thickness greater than 5.0 mm, the test piece may be machined down to a thickness of not less than 5.0 mm with one original surface retained; in the bend test, the retained original surface of the test piece shall be located on the side subjected to tensile deformation. For plate and sheet with a thickness of not greater than 5.0 mm, the bend test shall be carried out on the full cross-section. The width of the test piece is 15 mm.

6.5 β Transus Temperature

The inspection of the β transus temperature of the products shall be carried out in accordance with the provisions of GB/T 23605.

6.6 Visual Quality

The visual quality of the products shall be inspected by the visual examination method.

7 Inspection Rules

7.1 Inspection and Acceptance

7.1.1

The products shall be inspected by the supplier or a third party.

7.1.2

The purchaser may inspect the products received in accordance with the provisions of this document. When the inspection results do not conform to the provisions of this document or the purchase order, the matter shall be raised with the supplier in writing and settled through negotiation between the supplier and the purchaser. Objections concerning the shape dimensions and their permissible deviations and the visual quality shall be raised within one month from the date of receipt of the products; objections concerning the chemical composition, mechanical properties and bend properties shall be raised within three months from the date of receipt of the products. If arbitration is required, sampling shall be carried out jointly by the supplier and the purchaser at the purchaser's premises or as agreed upon.

7.2 Batching

The products shall be submitted for acceptance in lots. Each lot shall consist of products of the same designation, melting furnace number, specification, manufacturing method, condition and from the same heat-treatment furnace batch.

7.3 Inspection Items

Each lot of products shall be subjected to the inspection of the chemical composition, shape dimensions and their permissible deviations, room-temperature tensile properties, bend properties and visual quality. When the purchaser has requirements for the elevated-temperature tensile properties, elevated-temperature stress-rupture properties and β transus temperature, and states them in the purchase order, the elevated-temperature tensile properties, elevated-temperature stress-rupture properties and β transus temperature of the products shall also be inspected.

7.4 Sampling

The sampling of the products shall conform to the provisions of Table 8.

Table 8 — Sampling

Inspection item	Sampling provision	Clause for technical requirements	Clause for test method
Chemical composition	1 sample taken at random per lot	5.1	6.1
Shape dimensions and their permissible deviations	Every sheet	5.2	6.2
Mechanical properties	Room-temperature tensile: 2 sheets taken at random per lot, 1 transverse test piece from each	5.3.1	6.3.1
	Elevated-temperature tensile: 2 sheets taken at random per lot, 1 transverse test piece from each	5.3.2	6.3.2
	Elevated-temperature stress-rupture: 2 sheets taken at random per lot, 1 transverse test piece from each	5.3.2	6.3.3
Bend properties	2 sheets taken at random per lot, 1 transverse test piece from each	5.4	6.4
β transus temperature	1 test piece taken at random per lot	5.5	6.5
Visual quality	Every sheet	5.6	6.6

NOTE: The hydrogen content shall be analyzed on samples taken from the finished products; for the other elements, the supplier reports the analysis results of the ingot, and the re-verification by the purchaser is carried out on the finished products.

7.5 Judgement of Inspection Results

7.5.1

When the inspection result of the chemical composition is non-conforming, the lot of products shall be judged non-conforming.

7.5.2

When the inspection results of the shape dimensions and their permissible deviations or the visual quality are non-conforming, the individual product shall be judged non-conforming.

7.5.3

In the tests of the mechanical properties and the bend properties, when the inspection result of one test piece is non-conforming, double the number of test pieces shall be taken from the lot for a repeat inspection of the non-conforming item. When one test piece in the repeat inspection is still non-conforming, the lot of products shall be judged non-conforming. However, the supplier is permitted to inspect the non-conforming item sheet by sheet, and the conforming products may be re-formed into lots for delivery.

8 Marking, Packaging, Transport, Storage and Accompanying Documents

8.1 Marking

8.1.1 Product Marking

The following marks (or labels) shall be made on the products that have passed inspection, on which at least the following contents shall be stated:

a) name of the manufacturer and trademark;

b) designation;

c) specification;

d) condition;

e) batch number;

f) number of this document.

8.1.2 Packaging Marking

The packaging marking of the products shall conform to the provisions of GB/T 8180.

8.2 Packaging, Transport and Storage

The packaging, transport and storage of the products shall conform to the provisions of GB/T 8180.

8.3 Accompanying Documents

Each lot of products shall be accompanied by accompanying documents, which shall include the supplier information, product information, number of this document and the date of delivery or date of packaging, and shall also preferably include:

a) a quality certificate, with the following contents:

——product name, designation, specification and condition;

——ingot number, batch number, batch weight and quantity of the products;

——main properties and technical parameters of the products;

——the results of all analyses and inspections and the seal of the quality inspection department;

——others.

b) a certificate of conformity, with the following contents:

——ingot number or batch number;

——date of inspection;

——signature or seal of the inspector;

——others.

c) others.

9 Contents of the Purchase Order

The purchaser may, according to its own needs, list the following contents in the purchase order for ordering the products specified in this document:

a) product name;

b) designation;

c) specification;

d) condition;

e) weight;

f) quantity;

g) number of this document;

h) others.