1 At a Glance

Product	**Type 316L stainless steel plate, sheet and strip** - for pressure vessels and general corrosion-resistant applications.
Grade / UNS	Type 316L / **UNS S31603** (EN 1.4404, JIS SUS316L) - low-carbon molybdenum-bearing austenitic stainless steel.
Size & Forms	Plate and sheet, hot-rolled or cold-rolled; thickness from approx. 0.3 mm (sheet) to 100 mm+ (plate); cut-to-size or coil.
Condition	Furnished **solution annealed and pickled** as standard; multiple surface finishes available (see page 2).
Base Standard	ASTM A240/A240M and ASME SA-240 (Section II, Part A); dimensional tolerances per ASTM A480/A480M.
Why 316L	Carbon limited to 0.030 % prevents weld sensitization; 2 - 3 % Mo gives superior **chloride pitting and crevice corrosion** resistance.

2 Chemical Requirements (Type 316L, mass %)

Element	Requirement	Role in service
C	0.030 max	Low carbon - avoids weld sensitization
Mn	2.00 max	Strength, hot-workability
P	0.045 max	Impurity limit
S	0.030 max	Impurity limit
Si	0.75 max	Deoxidizer, scaling resistance
Cr	16.0 - 18.0	Base passive-film / corrosion resistance
Ni	10.0 - 14.0	Austenite stability, toughness
Mo	2.00 - 3.00	Chloride pitting & crevice resistance
N	0.10 max	Strength, austenite stabilization

Composition limits per ASTM A240/A240M (grade 316L). Many heats are **dual-certified 316/316L**, satisfying both grades; confirm on the mill certificate.

3 Mechanical Properties (solution annealed, room temperature)

Property	Requirement
Tensile strength, min	485 MPa (70 ksi)
Yield strength (0.2 % offset), min	170 MPa (25 ksi)
Elongation in 50 mm, min	40 %
Hardness, max	217 HB / 95 HRB

Minimum values per ASTM A240, solution-annealed condition. Design allowables at elevated temperature per ASME BPVC Section II, Part D.

4 Dimensional Tolerances (per ASTM A480/A480M)

Item	Range	Standard tolerance
Thickness	**up to 4.75 mm**	**± 0.25 mm**
Thickness	**4.76 - 12.7 mm**	**± 0.38 mm**
Thickness	**over 12.7 mm**	**± 0.76 mm**
Width	**1000 / 1219 / 1500 mm**	**+ 3 / – 0 mm**
Flatness (914 mm rule)	**plate 3 - 12 mm, 316L**	**5/16 in. (≈ 8 mm) max gap**
Camber	**per 2000 mm**	**≤ 6 mm**

Tolerance is applied to the ordered nominal thickness, not a designer's minimum required thickness. A480 writes inch-pound and SI tolerances separately - state which system applies. Closer tolerances are available at extra cost and lead time.

5 Surface Finishes & Typical Use

Finish	Description	Typical use
No. 1	**Hot-rolled, annealed, pickled**	**Industrial plate, no gloss required**
2D	**Cold-rolled, annealed, pickled, matte**	**General fabrication, building**
2B	**Cold-rolled, annealed, pickled, skin-passed**	**Food, chemical, general equipment**
BA	**Bright annealed**	**Automotive, appliance, sanitary**
No. 4 / HL	**Polished / hairline**	**Architecture, kitchen, decoration**

6 Testing & Inspection

Check	Requirement	Method
Chemical analysis	One analysis per heat / lot	ASTM A751
Tensile test	1 specimen per lot - YS, UTS, elongation	ASTM A370
Hardness	Each lot	ASTM A370
Intergranular corrosion	When specified (A262 Practice E)	ASTM A262
Ultrasonic test	When specified, plate / sheet	ASTM A578
PMI / OES	Positive material identification on request	XRF / OES
Dimensional & flatness	Thickness, width, length, camber	ASTM A480

Third-party inspection (SGS, BV, TÜV) and EN 10204 3.2 certificates can be arranged on request.

7 Frequently Asked Questions

Q. 316 or 316L - which should I specify for a welded vessel?
316L. Its 0.030 % carbon maximum avoids chromium-carbide precipitation in the heat-affected zone, so no post-weld anneal is normally required. The lower strength (170 vs 205 MPa yield) rarely governs design.

Q. Why do suppliers offer dual-certified 316/316L plate?
A heat can be made to meet both sets of limits at once. Dual certification gives more flexibility and shorter lead time - just make sure both grades appear on the mill certificate.

Q. What is the difference between 2B and BA finish?
2B is cold-rolled, annealed, pickled and lightly skin-passed - the standard general finish. BA is bright annealed in a controlled atmosphere, giving a smoother, reflective surface for hygienic or decorative use.

Q. How is thickness tolerance applied, and can I get tighter?
Per A480, e.g. ±0.25 mm up to 4.75 mm and ±0.38 mm for 4.76-12.7 mm. Closer tolerances can be ordered but must be agreed with the mill - they raise cost and lead time.

Q. Do you price by theoretical or actual weight?
Either, as long as it is written into the contract. A480 tolerances allow delivered mass to differ from the theoretical figure, so state the convention before ordering to avoid disputes at the port.

Q. Can you cut to size, slit coils or supply specific sheet sizes?
Yes. Cut-to-size, slitting and standard sheet sizes can be arranged. Note that cutting releases stress, so flatness of a cut piece may differ from the original mill plate.

Q. Is intergranular corrosion testing included?
It is supplied when specified on the order (ASTM A262 Practice E). Confirm the requirement at enquiry stage, especially for welded pressure-vessel service.

Q. What documentation will I receive?
EN 10204 3.1 Mill Test Certificate with chemistry, mechanical properties, heat number and lot traceability; PMI, UT and 3.2 certification are available on request.

8 316 vs 316L - Quick Guide

- **Carbon:** 316 ≤ 0.08 %; 316L ≤ 0.030 %. Choose 316L for welded assemblies and heavy gauge where intergranular corrosion is a concern.
- **Strength:** annealed 316 tensile 515 MPa / yield 205 MPa; 316L tensile 485 MPa / yield 170 MPa - a modest reduction that rarely governs vessel design.

9 Size, Form & Certification

Item	Available / requirement
Thickness	Approx. 0.3 mm (cold-rolled sheet) to 100 mm+ (hot-rolled plate)
Width & length	Standard mill sizes or cut-to-size; coil or cut sheet
Edge	Mill edge or slit edge, as specified
Certification	EN 10204 3.1 MTC with heat-number traceability

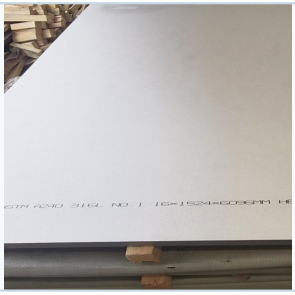
10 Ordering Information

State: quantity · grade 316L / UNS S31603 · thickness, width and length · finish (No.1 / 2B / BA / No.4...) · edge (mill or slit) · tolerance · flatness · forming or welding requirement · testing (UT, intergranular corrosion, PMI) · specification edition · certification (EN 10204 3.1).

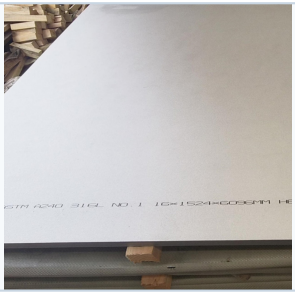
All ASTM A240 Type 316L plate is supplied with EN 10204 3.1 Mill Test Certificates - chemistry, mechanical properties, heat number and full lot traceability.

1 Product Photos - Plate Surface & Marking

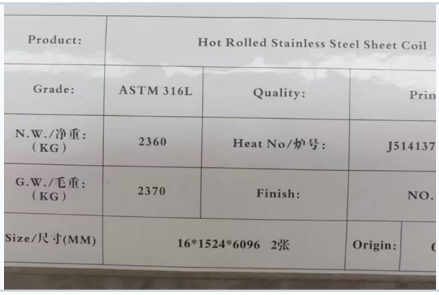
Hot-rolled, solution-annealed and pickled 316L plate; grade, size, heat number and net weight marked on the plate.



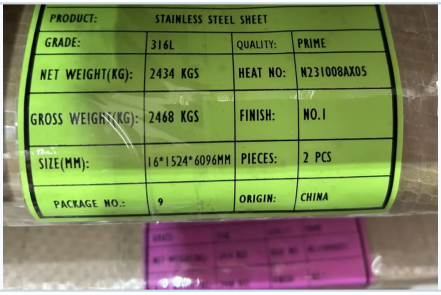
316L NO.1 plate - ASTM A240, 16x1524x6096 mm marked



316L pickled plate, untrimmed edge - identification tag



316L plate marking label - grade, heat no., N.W./G.W.



316L plate label showing 16x1524x6096 mm, 2 sheets

2 Inspection - Thickness, Hardness, PMI

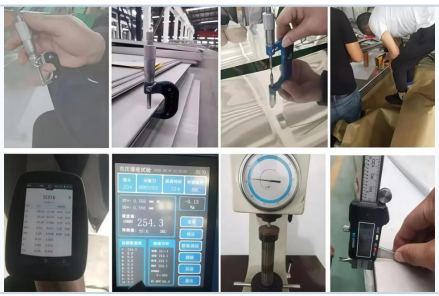
Thickness, hardness, width and chemistry are checked on actual plates before release.



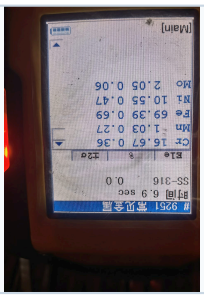
Thickness measured with micrometer



PMI / XRF analysis - grade 316L confirmed



Hardness and width inspection in progress



PMI test on hot-rolled 316L plate - full analysis screen

3 Packing & Container Loading

Plates are protected with waterproof fabric and secured on pallets inside the container for safe ocean shipment.



Waterproof-wrapped 316L plates loaded and lashed in container



Waterproof fabric packing - bundle secured



Palletised plates, container loading



Wooden-pallet packing before shipment

4 What These Photos Prove

Area	Evidence shown	Buyer value
Product	**Genuine 316L plate, pickled finish**	**Visual confirmation of grade and finish**
Marking	**Size, heat no. and weights on plate/label**	**Traceability and correct dimensions**
Inspection	**Thickness / hardness / PMI performed**	**Quality verified before shipping**
Packing	**Waterproof wrap, pallets, container lashing**	**Damage protection for long transit**

5 Ordering & Documentation

Specify grade 316L / UNS S31603, thickness, width, length, finish (No.1 / 2B / BA...), edge condition, tolerance and testing. Every lot is supplied with an **EN 10204 3.1 Mill Test Certificate**; PMI, UT and intergranular-corrosion testing are available on request.

Pair this photo book with the ASTM A240 316L technical brief - chemistry, mechanical properties, A480 tolerances, inspection plan and buyer FAQ.