**This page is mainly introduced the 316L chemical information,mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of 316L,such as it is commonly used in bars, sheet,plates, steel coils, steel pipes,forged and other materials application.**

# Data Table for Grades Stainless Steels 316L

| 316L Standard Number: | | |
|---|---|---|
| ITEM | Standard Number | Descriptions |
| 1 | SAE AMS-QQ-S-763B (1998) | Steel, Corrosion Resistant, Bars, Wire, Shapes, and Forgings |
| 2 | A 182/A 182M (2012) | Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service |
| 3 | A 240/A 240M (2012) | Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications |
| 4 | A 249/A 249M (2010) | Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes |
| 5 | A 269 (2010) | Seamless and Welded Austenitic Stainless Steel Tubing for General Service |
| 6 | A 276 (2010) | Stainless Steel Bars and Shapes |
| 7 | A 312/A 312M (2012) | Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes |
| 8 | A 314 (2008) | Stainless Steel Billets and Bars for Forging |
| 9 | A 358/A 358M (2008) | Electric-Fusion-Welded Austenitic Chromium-Nickel Stainless Steel Pipe for High-Temperature Service and General Applications |
| 10 | A 409/A 409M (2009) | Welded Large Diameter Austenitic Steel Pipe for Corrosive or High-Temperature Service |
| 11 | A 473 (2009) | Stainless Steel Forgings |
| 12 | A 478 (2008) | Chromium-Nickel Stainless Steel Weaving and Knitting Wire |
| 13 | A 479/A 479M (2011) | Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels |
| 14 | A 511/A 511M (2012) | Seamless Stainless Steel Mechanical Tubing |
| 15 | A 554 (2011) | Welded Stainless Steel Mechanical Tubing |
| 16 | A 580/A 580M (2012) | Stainless Steel Wire |
| 17 | A 632 (2009) | Seamless and Welded Austenitic Stainless Steel Tubing (Small-Diameter) for General Service |
| 18 | A 666 (2010) | Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar |
| 19 | A 774/A 774M (2009) | As-Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Service at Low and Moderate Temperatures |
| 20 | A 778 (2009) | Welded, Unannealed Austenitic Stainless Steel Tubular Products |
| 21 | A 793 (2009) | Rolled Floor Plate, Stainless Steel |
| 22 | A 813/A 813M (2009) | Single- or Double-Welded Austenitic Stainless Steel Pipe |
| 23 | A 814/A 814M (2008) | Cold-Worked Welded Austenitic Stainless Steel Pipe |
| 24 | A 943/A 943M (2009) | Spray-Formed Seamless Austenitic Stainless Steel Pipes |

| | | |
|---|---|---|
| 25 | A 959 (2011) | Standard Guide for Specifying Harmonized Standard Grade Compositions for Wrought Stainless Steels |
| 26 | A 965/A 965M (2012) | Steel Forgings, Austenitic, for Pressure and High Temperature Parts |
| 27 | A 988/A 988M (2011) | Hot Isostatically-Pressed Stainless Steel Flanges, Fittings, Valves, and Parts for High Temperature Service |
| 28 | SAE J 405 (1998) | Chemical Compositions of SAE Wrought Stainless Steels |

## 316L Chemical composition(mass fraction)(wt.%)

| Chemical | Min.(%) | Max.(%) |
|---|---|---|
| C | | 0.03 |
| Si | | 1.00 |
| Mn | | 2.00 |
| P | | 0.045 |
| S | | 0.035 |
| Cr | 16.0 | 18.0 |
| Ni | 10.0 | 14.0 |
| Mo | 2.00 | 3.00 |
| N | | 0.10 |

## 316L Physical Properties

| | | |
|---|---|---|
| Tensile strength | 115-234 | σb/MPa |
| Yield Strength | 23 | σ 0.2 ≥/MPa |
| Elongation | 65 | δ5≥ (%) |
| ψ | - | ψ≥ (%) |
| Akv | - | Akv≥/J |
| HBS | 123-321 | - |
| HRC | 30 | - |

## 316L Mechanical Properties

| | | |
|---|---|---|
| Tensile strength | 231-231 | σb/MPa |
| Yield Strength | 154 | σ 0.2 ≥/MPa |
| Elongation | 56 | δ5≥(%) |
| ψ | - | ψ≥(%) |
| Akv | - | Akv≥/J |
| HBS | 235-268 | - |
| HRC | 30 | - |

| 316L Heat Treatment Regime | | | | |
|---|---|---|---|---|
| **Annealing** | **Quenching** | **Tempering** | **Normalizing** | **Q & T** |
| √ | √ | √ | √ | √ |

| 316L Range of products | | | | |
|---|---|---|---|---|
| Product type | Products | Dimension | Processes | Deliver Status |
| Plates / Sheets | Plates / Sheets | 0.08-200mm(T)*W*L | Forging, hot rolling and cold rolling | Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting |
| Steel Bar | Round Bar, Flat Bar, Square Bar | Φ8-1200mm*L | Forging, hot rolling and cold rolling, Cast | Black, Rough Turning, Shot Blasting, |
| Coil / Strip | Steel Coil /Steel Strip | 0.03-16.0x1200mm | Cold-Rolled & Hot-Rolled | Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting |
| Pipes / Tubes | Seamless Pipes/Tubes, Welded Pipes/Tubes | OD:6-219mm x WT:0.5-20.0mm | Hot extrusion, Cold Drawn, Welded | Annealed, Solution and Aging, Q+T, ACID-WASHED |

## We can produce Stainless Steels the specifications follows:

Note:
(1) listed in the table apex diameter (d), to steel thickness (a) multiples said.
(2) in the ASTM A6 standard specified scope can meet any additional conditions.
(3) from the standard for 50 mm (2 in).
Mechanical properties
Mechanische Eigenschaften
Caracteristiques mecaniques
ReH Minimum yield strength / Mindestwert der oberen Streckgrenze / Limite d’elasticite minimale
Rm Tensile strength / Zugfestigkeit / Resistance a la traction
A Minimum elongation / Mindestwert der Bruchdehnung / Allongement minimal
J Notch impact test / Kerbschlagbiegeversuch / Essai de flexion par choc

Round bar:
Diameter : 1mm-2000mm
Square bar:
Size: 50mm * 50mm-600mm *600mm
Plate steel/flat bar:
Size: Thickness: 0.1mm-800mm Width: 10mm to 1500mm
Tube/pipe:
Size: OD: 6-219mm WT: 1-35 mm.
Cold-rolled sheet: Thickness: 2-5mm Width:1000mm Length: 2000mm
Hot-rolled sheet: Thickness:6-80mm Width: 210-610mm
Length: We can supply any length based on the customer's requirement.

Forging/hot rolling/ extrusion of steel.
Forging: Shafts with flanks/pipes/tubes/slugs/donuts/cubes/other shapes
Finished goods condition: hot forging/hot rolling + annealing/normalizing + tempering/quenching + tempering/any conditions based on the customer's requirement
Surface conditions: scaled (hot working finish)/ground/rough machining/fine machining/based on the customer's requirement
Furnaces for metallurgical processing: electrode arc + LF/VD/VOD/ESR/Vacuum consumable electrode.
Ultrasonic inspection: 100% ultrasonic inspection for any inperfections or based on the customer's requirement.
UTS according to SEP 1921 C/c,D/d,E/e;A388 or GB/T 6402
Excellent service for all kinds of industries, with advantages of technologies, equipment and price.
We serve you with our honesty, integrity, and professionality.