



# TECHNICAL DATA SHEET

## 316L Stainless Steel / SUS316L

Low Carbon Austenitic Stainless Steel

VTECH  
MATERIALS LIBRARY

### Document Control

|               |                                         |                    |                                            |
|---------------|-----------------------------------------|--------------------|--------------------------------------------|
| Document No.  | TDS-SS-316L-A240                        | Revision           | A                                          |
| Issue Date    | 2026-04-07                              | Owner              | Engineering                                |
| Specification | ASTM A240 / A276 / A312 by product form | Product Form / UNS | Plate, sheet, bar, pipe, tube / UNS S31603 |

**Engineering use note:** Starter-library values are intended for engineering screening and template standardization. Verify against the latest governing specification, drawing, PO, and MTR before production release.

### 1. General Description

316L is a low-carbon molybdenum-bearing austenitic stainless steel used where corrosion resistance, weldability, and fabricability are required. The lower carbon level helps reduce sensitization risk after welding.

### 2. Chemical Composition (wt%)

| Property        | Value     |
|-----------------|-----------|
| Chromium (Cr)   | 16.0-18.0 |
| Nickel (Ni)     | 10.0-14.0 |
| Molybdenum (Mo) | 2.0-3.0   |
| Carbon (C)      | <=0.03    |
| Manganese (Mn)  | <=2.00    |
| Silicon (Si)    | <=0.75    |
| Phosphorus (P)  | <=0.045   |
| Sulfur (S)      | <=0.03    |
| Nitrogen (N)    | <=0.10    |
| Iron (Fe)       | Balance   |

### 3. Mechanical Properties

| Property  | Value    |
|-----------|----------|
| Condition | Annealed |

| Property                  | Value                         |
|---------------------------|-------------------------------|
| Ultimate tensile strength | $\geq 485$ MPa                |
| 0.2% yield strength       | $\geq 170$ MPa                |
| Elongation                | $\geq 40$ %                   |
| Hardness                  | $\leq 95$ HRB typical wrought |

#### 4. Physical Properties

| Property             | Value                  |
|----------------------|------------------------|
| Density              | 8.00 g/cm <sup>3</sup> |
| Elastic modulus      | 193 GPa                |
| Thermal conductivity | 16 W/m.K               |
| Melting range        | 1370-1400 C            |

#### 5. Heat Treatment / Processing

Annealed condition is typical. 316L is not hardenable by heat treatment; strengthening is generally by cold work.

#### 6. Corrosion / Environmental Performance

Very good general corrosion resistance and improved pitting/crevice resistance over 304 because of molybdenum. Widely used in chemical processing, marine-adjacent hardware, and food/pharma equipment.

#### 7. Key Characteristics

- Excellent weldability
- Improved chloride resistance versus 304
- Good formability
- Good cryogenic toughness
- Non-magnetic in annealed condition, may become slightly magnetic after cold work

#### 8. Typical Applications

- Process equipment
- Piping and tubing
- Food and pharmaceutical equipment
- Marine hardware
- Architectural and clean service components

#### 9. Standards & Equivalents

|             |
|-------------|
| ASTM A240   |
| ASTM A276   |
| ASTM A312   |
| JIS SUS316L |
| UNS S31603  |
| EN 1.4404   |

## 10. Notes & Limitations

Corrosion performance depends strongly on environment, finish, fabrication quality, and cleaning/passivation practice.