

# UNS S31703 / SS 317L

## CHEMICAL, MECHANICAL & CORROSION DATA

STUDS | HEX BOLTS | NUTS | WASHERS | CUSTOM FASTENERS



### IMPORTANT – SPECIFICATION NOTE:

ASTM A193 Grade B8T is UNS S32100 / SS 321, NOT UNS S31703.  
UNS S31703 is SS 317L. Do not specify S31703 as A193 B8T.  
Select the exact ASTM product/bolting specification on the purchase order.



## 1 IDENTIFICATION & EQUIVALENTS

| UNS No. | AISI | EN (Werkstoff) | EN Designation  | JIS      | Common ASTM Product Standards (for this grade)                                                                                                       |
|---------|------|----------------|-----------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| S31703  | 317L | 1.4438         | X2CrNiMo18-15-4 | SUS 317L | A240 / SA240, A276 / SA276, A182 F317L / SA182, A403 WP317L / SA403, A213 TP317L / SA213 (Depending on product form. Not all are bolting standards.) |

## 2 CHEMICAL COMPOSITION (Typical, wt. %)

| C       | Mn     | Si     | P       | S       | Cr          | Ni          | Mo        | N      | Fe      |
|---------|--------|--------|---------|---------|-------------|-------------|-----------|--------|---------|
| ≤ 0.030 | ≤ 2.00 | ≤ 1.00 | ≤ 0.045 | ≤ 0.030 | 18.0 – 20.0 | 11.0 – 15.0 | 3.0 – 4.0 | ≤ 0.10 | Balance |

## 3 MECHANICAL PROPERTIES (Typical– ASTM A182 F317L, Solution Annealed Forging)

| Property                              | Metric Units | Imperial Units |
|---------------------------------------|--------------|----------------|
| Tensile Strength, minimum             | ≥ 515 MPa    | ≥ 75 ksi       |
| Yield Strength (0.2% offset), minimum | ≥ 205 MPa    | ≥ 30 ksi       |
| Elongation in 2 in (50 mm), minimum   | ≥ 30 %       | ≥ 30 %         |
| Reduction of Area, minimum            | ≥ 50 %       | ≥ 50 %         |
| Hardness, maximum                     | 217 HBW      | 96 HRB         |

Note: Mechanical properties vary with product form (bar, forging, plate, tube, etc.) and the applicable ASTM specification. ASTM A240 317L plate typically has elongation ≥ 40% (in 2 in).

## 4 SOLUTION ANNEALING

### Heat Treatment Temperature

### 1900 °F (1040 °C) minimum

for TP317L per ASTM tubular heat-treatment tables, followed by water quenching or other rapid cooling.

For forged products, verify the applicable ASTM A182 heat-treatment requirement.

**Avoid slow cooling through carbide precipitation range.**

## 5 CORROSION RESISTANCE

| Environment / Chemical | Performance of SS 317L (UNS S31703)                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| General                | Excellent resistance to many organic acids and oxidizing environments.                                                                  |
| Acetic acid            | Generally good in many tested conditions.                                                                                               |
| Phosphoric acid        | Useful across many conditions, but performance depends on temperature and concentration.                                                |
| Sulfuric acid          | Useful only in specific concentration and temperature windows.                                                                          |
| Chlorides (e.g. NaCl)  | Better pitting and crevice resistance than 316L due to higher Mo (3–4%), but NOT immune to warm, stagnant seawater or concentrated HCl. |



### Important Note:

Corrosion resistance depends strongly on concentration, temperature, impurities, aeration and crevices. Always validate material suitability for actual service conditions.

## 6 WHY CHOOSE 317L?

|                                                                                                                                                                 |                                                                                                                     |                                                                                                                                                                                                                  |                                                                                                                                                       |                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Higher molybdenum (3–4%) for improved pitting & crevice corrosion resistance |  Low carbon for good weldability |  Reliable performance in chemical processing, pulp & paper, FGD/scrubber systems, petrochemical and pharmaceutical industries |  Suitable for studs, hex bolts, nuts, washers and custom fasteners |  Consistent quality, material traceability and customer-focused service from Aanuraj Fasteners |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Sources: ASTM A193/A193M; ASTM A182; ASTM A240/A276/A213; ASME II-A; Alleima corrosion tables.

Values are typical and for reference only.