**Datasheet:**

# EN 1.4307/304L – Austenite Round Bars - Stainless Steel

**Alumeco ApS**
**14-02-2025**

| | |
|---|---|
| **Internal alloy name:** | **1.4307** |
| **Alloy type:** | **Austenite** |
| **Chemical Symbol:** | **X2CrNi18-9** |
| **EN:** | **EN 1.4307** |
| **AISI:** | **304L** |
| **UNS:** | **S30403** |
| **SS:** | **2352** |
| **JIS:** | **SUS304L** |
| **GB:** | **S30403** |

## Main usage:

- Food and beverage industry equipment
- Chemical and pharmaceutical industry equipment
- Heat exchangers
- Storage tanks and containers
- Pipes
- Flanges and valves

## Main properties:

- Excellent weldability
- Good stability against corrosion
- Good formability, both cold and hot
- Resistance to intergranular corrosion (EN 10088-3)

## Important norms and literature:

**General Standards:**
EN 10088-1: List of stainless Steel

**Product standards:**
EN 10088-3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes

**Geometric Tolerance:**
EN 10060: Hot rolled round steel bars for general purposes – Dimensions and tolerances on shape and dimensions.

EN 10278: Dimensions & tolerances of bright steel products

## Chemical composition in %: EN 10088-1

| C | Si | Mn | P | S | Cr | Cu | Ni | Remarks | Rest |
|---|---|---|---|---|---|---|---|---|---|
| ≤ 0,030 | ≤ 1,00 | ≤ 2,00 | ≤ 0,045 | ≤ 0,030* | 17,5 – 19,5 | - | 8,0 – 10,5 | N ≤ 0,10 | Fe |

*** For machinability, a controlled sulfur content of 0,015%-0,030% is recommended & permitted. For weldability a controlled sulfur content of 0,008%- 0,030% is recommended & permitted. For polishability, a controlled sulfur content of 0,015% is recommended.**

## Mechanical properties: EN 10088-3

| **Diameter** mm | **$R_m$** MPa | **$R_{p0,2}$** MPa | **$R_{p1,0}$** MPa | **Hardness*** HBW |
|---|---|---|---|---|
| ≤ 160 | 500 - 700 | Min. 175 | Min. 210 | Max. 215 |
| 160 < d ≤ 250 | | | | |

*** Information values only;**

## Physical properties:

| Density g/cm³ | Electrical resistivity Ω mm² / m | Thermal conductivity W/m K | Thermal expansion (µm m$^{-1}$ K$^{-1}$) | Specific heat (J kg$^{-1}$ K$^{-1}$) | E - modulus (N / mm²) | Magnetizable | PREN (Min.) |
|---|---|---|---|---|---|---|---|
| 7,9 | 0,73 | 15 | 16,0 | 500 | 200.000 | No | 17,5 |

# Tolerances for rounded bars for EN 1.4305:

| **Tolerances classes** | | | | |
|---|---|---|---|---|
| **Diameter** *d* **(mm)** | **Tolerance classes to ISO 286-2** | | | |
| | H9 | H10 | H11 | H12 |
| 6 < *d* ≤ 10 | +0<br>-0,036 | +0<br>-0,058 | +0<br>-0,090 | +0<br>-0,150 |
| 10 < *d* ≤ 18 | +0<br>-0,043 | +0<br>-0,070 | +0<br>-0,110 | +0<br>-0,180 |
| 18 < *d* ≤ 30 | +0<br>-0,052 | +0<br>-0,084 | +0<br>-0,130 | +0<br>-0,210 |
| 30 < *d* ≤ 50 | +0<br>-0,062 | +0<br>-0,100 | +0<br>-0,160 | +0<br>-0,250 |
| 50 < *d* ≤ 80 | +0<br>-0,074 | +0<br>-0,120 | +0<br>-0,190 | +0<br>-0,300 |
| 80 < *d* ≤ 120 | +0<br>-0,087 | +0<br>-0,140 | +0<br>-0,220 | +0<br>-0,350 |
| 120 < *d* ≤ 180 | +0<br>-0,100 | +0<br>-0,160 | +0<br>-0,250 | +0<br>-0,400 |
| 180 < *d* ≤ 200 | +0<br>-0,115 | +0<br>-0,185 | +0<br>-0,290 | +0<br>-0,460 |

* Values are referred from Table 2 of EN 10278:1999

| **Preferred dimensions, mass and dimensional tolerances of hot rolled round steel bars for general and precision purposes** | | |
|---|---|---|
| **Diameters**** d (mm) | **Limit deviation Normal** (mm) | **Limit deviation Precision (P)** (mm) |
| 10 | ± 0,4 | ± 0,15 |
| 12 | | |
| 13 | | ± 0,20 |
| 14 | | |
| 15 | | |
| 16 | ± 0,5 | |
| 18 | | |
| 19 | | |
| 20 | | |
| 22 | | |
| 24 | | ± 0,25 |
| 25 | | |
| 26 | ± 0,6 | |
| 27 | | |
| 28 | | |
| 30 | | |
| 32 | | ± 0,30 |
| 35 | | |
| 36 | ± 0,8 | |
| 38 | | |
| 40 | | |
| 42 | | ± 0,40 |
| 45 | | |
| 48 | | |
| 50 | | |
| 52 | ± 1 | |
| 55 | | |
| 60 | | ± 0,50 |
| 63 | | |
| 65 | | |
| 70 | | |
| 73 | | |
| 75 | | |
| 80 | | |
| 85 | ± 1,3 | Not Applicable |
| 90 | | |
| 95 | | |
| 100 | | |
| 105 | ± 1,5 | |
| 110 | | |
| 115 | | |
| 120 | | |
| 125 | ± 2 | |
| 130 | | |
| 135 | | |
| 140 | | |
| 145 | | |
| 150 | | |
| 155 | | |
| 160 | | |
| 165 | ± 2,5 | |
| 170 | | |
| 175 | | |
| 180 | | |
| 190 | | |
| 200 | | |
| 220 | ± 3 | |

| | | |
|---|---|---|
| 250 | ± 4 | |

* Values are referred from Table 1 of EN 10060:2003
** Diameters greater than 250 mm may be delivered with the limit deviation of ± 6,0 mm

| **Tolerance deviation k (for shafts)** | |
|---|---|
| **Specified length** *d* (mm) | **ISO K Tolerances** (mm)<br>**k11** |
| 25 < *d* ≤ 30 | +0,130<br>0 |
| 30 < *d* ≤ 50 | +0,160<br>0 |
| 50 < *d* ≤ 80 | +0,190<br>0 |
| 80 < *d* ≤ 120 | +0,220<br>0 |
| 120 < *d* ≤ 180 | +0,250<br>0 |
| 180 < *d* ≤ 250 | +0,290<br>0 |
| 250 < *d* ≤ 300 | +0,320<br>0 |

| **Deviation from straightness** | | | |
|---|---|---|---|
| **Product form** | **Steel group** | **Nominal dimension** | **Deviation max. (mm)** |
| Rounds | < 0,25% C | - | 1,0 |
| | ≥ 0,25% C, alloy steels, quenched and tempered steels | - | 1,5 |
| | Stainless steels, ball and roller bearing steels, tool steels | - | 1,0 |

* Values are referred from Table 4 of EN 10278:1999

| **Types of length and length tolerances** | | |
|---|---|---|
| **Type of length** | **Range** (mm) | **Limit deviation** |
| Manufacturing length (M) | 3000 < *L* ≤ 13000, with a range of 2000 per order item | 10 % of bars supplied may be below the minimum for the ordered range but not less than 75 % of the minimum of the range |
| Fixed length (F) | 3000 – 13000 | ± 100 mm |
| Exact length (E) | < 6000<br>6000 ≤ L ≤ 13000 | ± 25 mm<br>± 50 mm |

* Values are referred from Table 4 of EN 10060:2003