**Datasheet:**

# EN 1.4845-310S – Austenite Quarto Plates - Stainless Steel

**Alumeco ApS**
**03-12-2024**

| | |
|---|---|
| **Internal alloy name:** | **1.4845** |
| **Alloy type:** | **Heat-resistance Austenite** |
| **Chemical Symbol:** | **X8CrNi25-21** |
| **EN:** | **EN 1.4845** |
| **AISI:** | **310S** |
| **UNS:** | **S31008** |
| **SS:** | **2361** |
| **JIS:** | **SUS310S** |
| **GB:** | **S31008** |

## Main usage:

- Food processing industry.
- Chemical, petrochemical and pharmaceutical industry
- Construction sector
- Automotive and aerospace industry
- Furnace construction

## Main properties:

- Good weldability
- Great heat resistance and strength at high temperatures
- Good formability, both cold and hot
- Good resistance to corrosion

## Important norms and literature:

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

**Product standards:**
EN 10088-2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes

EN 10028-7: Flat products made of steels for pressure purposes - Part 7: Stainless steels

**Geometric Tolerance:**
EN 18286: Hot rolled stainless-steel plates -Tolerances on dimensions & shape

**Bending Tolerance:**
DIN 6935:2011-10: Cold bending of flat rolled steel

**Surface condition:**
EN 10088-2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes

## Chemical composition in %: EN 10088-1s

| C | Si | Mn | P | S | Cr | Mo | Ni | Remarks | Rest |
|---|---|---|---|---|---|---|---|---|---|
| ≤ 0,10 | ≤ 1,50 | ≤ 2,00 | ≤ 0,045 | ≤ 0,030* | 24,0-26,0 | - | 19,0-22,0 | 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

| Dim. range (mm) | Temper | Rm MPa | $Rp_{0,2}$ MPa | $Rp_{1,0}$ MPa | Elongation (Longitudinal) A% | Impact energy (Longitudinal) $KV_2$ | Hardness* HB |
|---|---|---|---|---|---|---|---|
| 15-150 | Hot rolled | 500 - 700 | Min. 190 | Min. 210 | 35 | - | Max. 192 |

*** 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 | 0,85 | 15 | 16,0 | 500 | 196.000 | No | - |

## Typical Alumeco products with this alloy

- **Plates - Dim: 15-150 mm x Length: >1500/(2000) mm**

## Surface definition: Hot rolled (HR) – 1D

| | |
|---|---|
| **Surface finish** | Free of scale |
| **Type of process route** | Hot rolled, heat treated, pickled. |
| **Notes** | Usually standard for most steel types to ensure good corrosion resistance; also common finish for further processing. It is permissible for grinding marks to be present. Not as smooth as 2D or 2B. |
| **Typical Roughness** *Ra* | 3,26 µm |

# Tolerances for Quarto Plates for EN 1.4845:

| **Tolerances on thickness** | | | | |
|---|---|---|---|---|
| **Nominal thickness *t* (mm)** | **Width *w* (mm)** | | | |
| | *w* < 2100 | 2100 ≤ *w* < 3000 | 3000 ≤ *w* < 3600 | *w* ≥ 3600 |
| *t* < 10 | +1,15 | +1,30 | +2,15 | - |
| 10 ≤ *t* < 20 | +1,40 | +1,55 | +2,15 | +2,30 |
| 20 ≤ *t* < 25 | +1,55 | +1,65 | +2,15 | +2,55 |
| 25 ≤ *t* < 50 | +1,80 | +1,90 | +2,40 | +2,95 |
| 50 ≤ *t* < 75 | +2,55 | +2,75 | +2,95 | +3,15 |
| 75 ≤ *t* < 100 | +2,75 | +2,95 | +3,15 | +3,35 |
| 100 ≤ *t* < 150 | +2,95 | +3,15 | +3,35 | +3,55 |

* Values are referred from Table 1 of ISO 18286:2008

| **Tolerance on width and length** |
|---|
| At the time of enquiry and purchase order, the purchaser shall specify which width and length tolerance class is applicable to the purchased material.<br>The choice of the trimming procedure is left to the manufacturer's discretion, unless otherwise stated in the purchase order. |

| **Tolerances on width for Class A** | |
|---|---|
| **Nominal width *w* (mm)** | **Tolerances** |
| 600 ≤ *w* < 2000 | 0<br>+15 |
| 2000 ≤ *w* < 3000 | 0<br>+20 |
| *w* ≥ 3000 | 0<br>+25 |

* Values are referred from Table 2 of ISO 18286:2008

| **Tolerances on length for Class A** | |
|---|---|
| **Nominal width *L* (mm)** | **Tolerances** |
| 600 ≤ *L* < 4000 | 0<br>+20 |
| 4000 ≤ *L*< 6000 | 0<br>+30 |
| 6000 ≤ *L* < 8000 | 0<br>+40 |
| 8000 ≤ *L* < 10000 | 0<br>+50 |
| 10000 ≤ *L* < 15000 | 0<br>+75 |
| 15000 ≤ *L* ≤ 20000 | 0<br>+100 |

* Values are referred from Table 3 of ISO 18286:2008

| **Tolerances on width and length for Class B (i.e. flame-cut plate)** | |
|---|---|
| **Nominal thickness *t* (mm)** | **Tolerances (mm)** |
| *t* ≤ 50 | 0<br>+10 |
| 50 < *t* ≤ 75 | 0<br>+13 |
| 75 < *t* ≤ 150 | 0<br>+19 |

* Values are referred from Table 4 of ISO 18286:2008

## Tolerances on width and length for Class C (i.e. abrasive-cut plate)

| Nominal thickness *t* (mm) | Tolerances (mm) |
|---|---|
| $t \leq 25$ | 3,2 |
| $25 < t \leq 50$ | 4,8 |
| $50 < t \leq 75$ | 6,4 |
| $75 < t \leq 100$ | 7,9 |

* Values are referred from Table 5 of ISO 18286:2008

## Normal tolerances for flatness

| Nominal thickness *t* (mm) | Tolerances (mm) Measuring length | |
|---|---|---|
| | 1000 | 2000 |
| $4 \leq t < 5$ | 9 | 14 |
| $5 \leq t < 8$ | 8 | 12 |
| $8 \leq t < 15$ | 7 | 10 |
| $15 \leq t < 25$ | 7 | 10 |
| $25 \leq t < 40$ | 6 | 9 |
| $40 \leq t \leq 250$ | 5 | 8 |

* Values are referred from Table 6 of ISO 18286:2008

## Cold bending of flat rolled steel according to DIN 6935:2011

To obtain uniform bends on bending rails, it is recommended that only bending radii from the series below be selected. The values printed in bold are to be preferred. (Dimensions in millimetres)

| ***r*** | **1** | 1,2 | **1,6** | 2 | **2,5** | 3 | 4 | 5 | **6** | 8 | **10** | 12 | **16** | **20** | **25** | 28 | **32** | 36 | **40** | 45 | **50** | **63** | **80** | **100** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

* Values are referred from DIN 6935:2011-10

## Minimum permissible bending radius *r* according to DIN 6935:2011

| Steel Grades | For bending transverse or parallel to the rolling direction | Minimum permissible bending radius *r* for thicknesses *s* *(mm)* | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $s \leq 1$ | $1 < s \leq 1{,}5$ | $1{,}5 < s \leq 2{,}5$ | $2{,}5 < s \leq 3$ | $3 < s \leq 4$ | $4 < s \leq 5$ | $5 < s \leq 6$ | $6 < s \leq 7$ | $7 < s \leq 8$ | $8 < s \leq 10$ | $10 < s \leq 12$ | $12 < s \leq 14$ | $14 < s \leq 16$ | $16 < s \leq 18$ | $18 < s \leq 20$ |
| S 355 J2 | Transverse | 1,6 | 2,5 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 36 | 45 | 50 |
| | Parallel | 1,6 | 1,6 | 4 | 5 | 8 | 10 | 12 | 16 | 20 | 25 | 32 | 36 | 40 | 50 | 63 |

* Values are referred from Table 1 of DIN 6935:2011-10 (S = Structual; XXX = Min. yield strength in MPa; J2 = Steel sub-grade).

## Permissible deviations for minimum bending radii *r* according to DIN 6935:2011

| Steel Grades | Permissible deviations for minimum bending radii *r* for thicknesses *s* | | |
|---|---|---|---|
| | $\leq 3$ | $3 < s \leq 8$ | $8 < s \leq 20$ |
| S 355 JR | + 1<br>0 | + 2<br>0 | + 3<br>0 |

* Values are referred from Table 2 of DIN 6935:2011-10