

**This page is mainly introduced the X5CrNiMo17-12-2 chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of X5CrNiMo17-12-2, 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 X5CrNiMo17-12-2**

| <b>X5CrNiMo17-12-2 Standard Number:</b> |                        |  |
|---|------------------------|--|
| <b>ITEM</b>                             | <b>Standard Number</b> | <b>Descriptions</b>  |
| 1                                       | DIN EN 10088-1         | Stainless steels - Part 1: List of stainless steels  |
| 2                                       | DIN EN 10088-2         | Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes  |
| 3                                       | DIN EN 10088-3         | Stainless steels - Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes |
| 4                                       | DIN EN 10088-4         | Stainless steels - Part 4: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for construction purposes   |
| 5                                       | DIN EN 10028-7         | Flat products made of steels for pressure purposes - Part 7: Stainless steels  |
| 6                                       | DIN EN 10088-5         | Stainless steels - Part 5: Technical delivery conditions for bars, rods, wire, sections and bright products of corrosion resisting steels for construction purposes                    |
| 7                                       | DIN EN 10216-5 (2004)  | Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 5: Stainless steel tubes   |
| 8                                       | DIN EN 10217-7         | Welded steel tubes for pressure purposes - Technical delivery conditions - Part 7: Stainless steel tubes   |
| 9                                       | DIN EN 10250-4         | Open die steel forgings for general engineering purposes - Part 4: Stainless steels  |
| 10                                      | DIN EN 10253-3         | Butt-welding pipe fittings - Part 3: Wrought austenitic and austenitic-ferritic (duplex) stainless steels without specific inspection requirements                                     |
| 11                                      | DIN EN 10253-4         | Butt-welding pipe fittings - Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements  |
| 12                                      | DIN EN 10272           | Stainless steel bars for pressure purposes   |
| 13                                      | DIN EN 10296-2 (2005)  | Welded circular steel tubes for mechanical and general engineering purposes - Technical delivery conditions - Part 2: Stainless steel  |
| 14                                      | DIN EN 10297-2 (2005)  | Seamless circular steel tubes for mechanical and general engineering purposes - Technical delivery conditions - Part 2: Stainless steel  |
| 15                                      | DIN EN 10222-5         | Steel forgings for pressure purposes - Part 5: Martensitic, austenitic and austenitic-ferritic stainless steels  |
| 16                                      | DIN EN 10263-5         | Steel rod, bars and steel wire for cold heading and cold extrusion - Part 5: Technical delivery conditions for stainless steels  |
| 17                                      | DIN EN 10264-4 (2002)  | Steel wire and wire products - Steel wire for ropes - Part 4: Stainless steel wire   |
| 18                                      | DIN EN 10269           | Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties   |
| 19                                      | DIN EN 10270-3         | Steel wire for mechanical springs - Part 3: Stainless spring steel wire  |

|    |                   |  |
|----|-------------------|--|
| 20 | DIN 1654-5 (1989) | Cold heading and cold extruding steels; technical delivery conditions for stainless steels   |
| 21 | DIN 17224 (1982)  | Stainless steel wire and strip for springs; technical delivery conditions  |
| 22 | DIN 17440 (2001)  | Stainless steels - Technical delivery conditions for drawn wire  |
| 23 | DIN 17440 (1975)  | Stainless steels - Technical delivery conditions for drawn wire  |
| 24 | DIN 17441 (1997)  | Stainless steels - Technical delivery conditions for cold rolled strips and slit coils strip and sheets cut from such strips for pressure purposes |
| 25 | DIN 17455 (1985)  | Welded circular tubes of stainless steels for general requirements; technical delivery conditions  |
| 26 | DIN 17456 (1985)  | Seamless circular tubes of stainless steels for general requirements; technical delivery conditions  |
| 27 | DIN 17457 (1985)  | Welded circular tubes of austenitic stainless steels for special requirements; technical delivery conditions                                       |
| 28 | DIN 17458 (1985)  | Seamless circular tubes of austenitic stainless steels for special requirements; technical delivery conditions                                     |
| 29 | DIN 5512-3        | Materials for rail vehicles - Steels - Part 3: Stainless steel flat products; Selected standard  |

### X5CrNiMo17-12-2 Chemical composition(mass fraction)(wt.%)

| Chemical | Min.(%) | Max.(%) |
|----------|---------|---------|
| C        |         | 0.07    |
| Si       |         | 1.00    |
| Mn       |         | 2.00    |
| P        |         | 0.045   |
| S        |         | 0.015   |
| Cr       | 16.5    | 18.5    |
| Mo       | 2.00    | 2.50    |
| Ni       | 10.0    | 13.0    |
| N        |         | 0.11    |

### X5CrNiMo17-12-2 Physical Properties

|                  |         |                          |
|------------------|---------|--------------------------|
| Tensile strength | 115-234 | $\sigma_b$ /MPa          |
| Yield Strength   | 23      | $\sigma_{0.2} \geq$ /MPa |
| Elongation       | 65      | $\delta_5 \geq$ (%)      |
| $\psi$           | -       | $\psi \geq$ (%)          |
| Akv              | -       | Akv $\geq$ /J            |
| HBS              | 123-321 | -                        |
| HRC              | 30      | -                        |

### X5CrNiMo17-12-2 Mechanical Properties

|                  |         |                          |
|------------------|---------|--------------------------|
| Tensile strength | 231-231 | $\sigma_b$ /MPa          |
| Yield Strength   | 154     | $\sigma_{0.2} \geq$ /MPa |
| Elongation       | 56      | $\delta_5 \geq$ (%)      |
| $\psi$           | -       | $\psi \geq$ (%)          |
| Akv              | -       | Akv $\geq$ /J            |
| HBS              | 235-268 | -                        |
| HRC              | 30      | -                        |

### X5CrNiMo17-12-2 Heat Treatment Regime

| Annealing | Quenching | Tempering | Normalizing | Q & T |
|-----------|-----------|-----------|-------------|-------|
| √         | √         | √         | √           | √     |

### X5CrNiMo17-12-2 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 imperfections or based on the customer's requirement.

UTS according to SEP 1921 C/c,D/d,E/e;A388 or GB/T 6402

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