

This page is mainly introduced the C45E chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of C45E, 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 C45E

| C45E Standard Number: |                 |   |
|-----------------------|-----------------|---|
| ITEM                  | Standard Number | Descriptions  |
| 1                     | NF EN 10083-1   | Steels for quenching and tempering - Part 1: General technical delivery conditions  |
| 2                     | NF EN 10083-2   | Steels for quenching and tempering - Part 2: Technical delivery conditions for non alloy steels   |
| 3                     | NF EN 10132-3   | Cold rolled narrow steel strip for heat treatment - Technical delivery conditions - Part 3: Steels for quenching and tempering                          |
| 4                     | NF EN 10250-2   | Open die steel forgings for general engineering purposes - Part 2: Non-alloy quality and special steels   |
| 5                     | NF EN 10269     | Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties  |
| 6                     | NF EN 10277-5   | Bright steel products - Technical delivery conditions - Part 5: Steels for quenching and tempering  |
| 7                     | NF EN 10297-1   | Seamless circular steel tubes for mechanical and general engineering purposes - Technical delivery conditions - Part 1: Non-alloy and alloy steel tubes |
| 8                     | NF EN 10305-1   | Steel tubes for precision applications - Technical delivery conditions - Part 1: Seamless cold drawn tubes  |
| 9                     | NF EN 10343     | Steels for quenching and tempering for construction purposes - Technical delivery conditions  |

| C45E Chemical composition(mass fraction)(wt.%) |         |         |
|--|---------|---------|
| Chemical                                       | Min.(%) | Max.(%) |
| C  | 0.42    | 0.50    |
| Si   |         | 0.40    |
| Mn   | 0.50    | 0.80    |
| P  |         | 0.035   |
| S  |         | 0.035   |
| Cr   |         | 0.40    |
| Ni   |         | 0.40    |
| Mo   |         | 0.10    |
| Cr+Ni+Mo                                       |         | 0.63    |

### C45E 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      | -                        |

### C45E 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      | -                        |

### C45E Heat Treatment Regime

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

### C45E 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          | $\Phi$ 8-1200mm*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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We serve you with our honesty, integrity, and professionalism.