

**This page is mainly introduced the 321S31 Datasheet, including chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of 321S31, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.**

## Datasheet for Steel Grades Specialsteel 321S31

| 321S31 Standard Number: |                 |   |
|-------------------------|-----------------|---|
| ITEM                    | Standard Number | Descriptions  |
| 1                       | BS 1449-2       | Steel plate, sheet and strip. Specification for stainless and heat-resisting steel plate, sheet and strip   |
| 2                       | BS 1501-3       | Steels for pressure purposes. Specification for corrosion- and heat-resisting steels: plates, sheet and strip   |
| 3                       | BS 1502         | Specification for steels for fired and unfired pressure vessels: sections and bars  |
| 4                       | BS 1503         | Specification for steel forgings for pressure purposes  |
| 5                       | BS 1506         | Specification for carbon, low alloy and stainless steel bars and billets for bolting material to be used in pressure retaining applications   |
| 6                       | BS 1554         | Specification for stainless and heat-resisting steel round wire   |
| 7                       | BS 3605-1       | Austenitic stainless steel pipes and tubes for pressure purposes. Specification for seamless tubes  |
| 8                       | BS 3605-2       | Austenitic stainless steel pipes and tubes for pressure purposes. Specification for longitudinally welded tubes   |
| 9                       | BS 3606         | Specification for steel tubes for heat exchangers   |
| 10                      | BS 6258         | Specification for hollow steel bars for machining   |
| 11                      | BS 970-1        | Specification for wrought steels for mechanical and allied engineering purposes. General inspection and testing procedures and specific requirements for carbon, carbon manganese, alloy and stainless steels |
| 12                      | BS 970-3        | Specification for wrought steels for mechanical and allied engineering purposes. Bright bars for general engineering purposes   |

| 321S31 Chemical composition(mass fraction)(wt.%) |         |         |
|--|---------|---------|
| Chemical   | Min.(%) | Max.(%) |
| C  |         | 0.08    |
| Si   |         | 1.00    |
| Mn   |         | 2.00    |
| P  |         | 0.045   |
| S  |         | 0.03    |
| Cr   | 17.00   | 19.00   |

|    |    |    |      |    |    |    |       |    |       |
|----|----|----|------|----|----|----|-------|----|-------|
| Mo |    |    |      |    |    |    |       |    |       |
| Ni |    |    | 9.00 |    |    |    | 12.00 |    |       |
| Ti |    |    | 5×C  |    |    |    | 0.80  |    |       |
| C  | Si | Mn | P    | S  | Cr | Ni | Mo    | V  | Ta    |
| W  | N  | Cu | Co   | Pb | B  | Nb | Al    | Ti | Other |
|    |    |    |      |    |    |    |       |    |       |

Specification for wrought steels for mechanical and allied engineering purposes. Bright bars for general engineering purposes

| 321S31 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      | -                        |

| 321S31 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      | -                        |

| 321S31 Heat Treatment Regime |           |           |             |       |
|------------------------------|-----------|-----------|-------------|-------|
| Annealing                    | Quenching | Tempering | Normalizing | Q & T |
| √                            | √         | √         | √           | √     |

### 321S31 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 Specialsteel the specifications follows:**