

**This page is mainly introduced the Inconel 718 Datasheet, including chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of Inconel 718, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.**

## Datasheet for Steel Grades Superalloys Inconel 718

| Inconel 718 Standard Number: |                      |                                                                                                                                                                                                                                                  |
|------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ITEM                         | Standard Number      | Descriptions                                                                                                                                                                                                                                     |
| 1                            | SAE AMS 5383E (2007) | Nickel Alloy, Corrosion and Heat-Resistant, Investment Castings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb(Nb) - 0.90Ti - 0.60Al - 18Fe Vacuum Melted Homogenization and Solution Heat Treated                                                                |
| 2                            | SAE AMS 5589F (2013) | Nickel Alloy, Corrosion and Heat-Resistant, Seamless Tubing 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode Remelted or Vacuum Induction Melted 1775°F (968°C) Solution Heat Treated                            |
| 3                            | SAE AMS 5590F (2010) | Nickel Alloy, Corrosion and Heat Resistant, Seamless Tubing 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1950°F (1066°C) Solution Heat Treated                                         |
| 4                            | SAE AMS 5596K (2007) | Nickel Alloy, Corrosion and Heat-Resistant, Sheet, Strip, Foil and Plate 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode Remelted or Vacuum Induction Melted 1775°F (968°C) Solution Heat Treated               |
| 5                            | SAE AMS 5597F (2009) | Nickel Alloy, Corrosion and Heat Resistant, Sheet, Strip, and Plate 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1950°F (1066°C) Solution Heat Treated                                 |
| 6                            | SAE AMS 5662M (2009) | Nickel Alloy, Corrosion and Heat-Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1775°F (968°C) Solution Heat Treated, Precipitation-Hardenable |
| 7                            | SAE AMS 5663M (2009) | Nickel Alloy, Corrosion and Heat-Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1775°F (968°C) Solution and Precipitation Heat Treated         |
| 8                            | SAE AMS 5664E (2006) | Nickel Alloy, Corrosion and Heat Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1950°F (1066°C) Solution Heat Treated, Precipitation Hardenable     |
| 9                            | SAE AMS 5832G (2010) | Nickel Alloy, Corrosion and Heat Resistant, Welding Wire 52.5Ni - 19Cr - 3.0Mo - 5.1Cb - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted                                                                                  |
| 10                           | SAE J 467b (1968)    | Special Purpose Alloys ("Superalloys")                                                                                                                                                                                                           |
| 11                           | SAE AMS 5917 (2011)  | Metal Injection Molded Nickel Based, Alloy 718 Parts, Hot Isostatically Pressed, Solutioned and Aged                                                                                                                                             |

| Inconel 718 Chemical composition(mass fraction)(wt.%) |         |         |
|-------------------------------------------------------|---------|---------|
| Chemical                                              | Min.(%) | Max.(%) |

|    |    |    |    |    |    |    |    |    |       |  |       |
|----|----|----|----|----|----|----|----|----|-------|--|-------|
| C  |    |    |    |    |    |    |    |    |       |  | 0.03  |
| Cr |    |    |    |    |    |    |    |    |       |  | 21.0  |
| Mo |    |    |    |    |    |    |    |    |       |  | 3.30  |
| Ni |    |    |    |    |    |    |    |    |       |  | 55.0  |
| Al |    |    |    |    |    |    |    |    |       |  | 0.60  |
| Nb |    |    |    |    |    |    |    |    |       |  | 5.50  |
| Fe |    |    |    |    |    |    |    |    |       |  | Bal   |
| Si |    |    |    |    |    |    |    |    |       |  | 0.35  |
| Mn |    |    |    |    |    |    |    |    |       |  | 0.35  |
| P  |    |    |    |    |    |    |    |    |       |  | 0.015 |
| S  |    |    |    |    |    |    |    |    |       |  | 0.015 |
| B  |    |    |    |    |    |    |    |    |       |  | 0.006 |
| C  | Si | Mn | P  | S  | Cr | Ni | Mo | V  | Ta    |  |       |
|    |    |    |    |    |    |    |    |    |       |  |       |
| W  | N  | Cu | Co | Pb | B  | Nb | Al | Ti | Other |  |       |
|    |    |    |    |    |    |    |    |    |       |  |       |

## Inconel 718

| Inconel 718 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      | -                        |

| Inconel 718 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 | - |
|-----|----|---|

### Inconel 718 Heat Treatment Regime

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

### Inconel 718 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 Superalloys the specifications follows:**