MW Components

# Carbon Steel Grade 1021 Fact Sheet

## AISI 1021 Steel, cold drawn

**Subcategories:** Carbon Steel; AISI 1000 Series Steel; Low Carbon Steel

**Close Analogs:**

**Key Words:** UNS G10210, ASTM A29, ASTM A510, ASTM A519, ASTM A545, ASTM A548, ASTM A576, carbon steels, ASTM A659, SAE J403, SAE J412, SAE J414, BS 970 070M20, EN3, BS 970 080M20

| Component | Weight % |
|---|---|
| C | 0.17-0.23 |
| Fe | 98.78-99.23 |
| Mn | 0.60-0.90 |
| P | Max 0.040 |
| S | Max 0.050 |

| Mechanical Properties | Metric | English | Comments | Cold Head | Hot Forge | Wire Form |
|---|---|---|---|---|---|---|
| Hardness, Brinell | 131 | 131 | | | | |
| Hardness, Knoop | 140 | 140 | Converted from Brinell hardness. | | | |
| Hardness, Rockwell B | 68 | 68 | Converted from Brinell hardness. | | | |
| Hardness, Vickers | 126 | 126 | Converted from Brinell hardness. | | | |
| Tensile Strength, Ultimate | 470 MPa | 68200 psi | | | | |
| Tensile Strength, Yield | 395 MPa | 57300 psi | | | | |
| Elongation at Break | 15% | 15% | In 50 mm | | | |
| Reduction of Area | 40% | 40% | | | | |
| Modulus of Elasticity | 205 GPa | 29700 ksi | Typical for steel | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Bulk Modulus | 160 GPa | 23200 ksi | Typical for steel | | | |
| Poissons Ratio | 0.29 | 0.29 | Typical For Steel | | | |
| Machinability | 70.00% | 70.00% | Based on AISI 1212 steel. as 100% machinability | | | |
| Shear Modulus | 80.0 GPa | 11600 ksi | Typical for steel | | | |
| **Electrical Properties** | **Metric** | **English** | **Comments** | **Cold Head** | **Hot Forge** | **Wire Form** |
| Electrical Resistivity | 0.0000159 ohm-cm | 0.0000159 ohm-cm | estimated by comparison with similar steel alloys | | | |
| | Temperature 0.000 °C | Temperature 32.0 °F | | | | |
| **Thermal Properties** | **Metric** | **English** | **Comments** | **Cold Head** | **Hot Forge** | **Wire Form** |
| Specific Heat Capacity | 0.472 J/g-°C | 0.113 BTU/lb-°F | Typical steel | | | |
| Thermal Conductivity | 49.8 /m-K | 346 BTU-in/hr-ft²-°F | Typical steel | | | |