



## ASM Aerospace Specification Metals Inc.

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**AISI Type 410 Stainless Steel, tempered at test temperature plus 28°C, tested at 595°C (1100°F)**

**Subcategory:** Ferrous Metal; Heat Resisting; Metal; Stainless Steel; T 400 Series Stainless Steel

**Close Analogs:** AISI Type 410S

**Key Words:** AFNOR Z 12 C 13, UNI X 12 Cr 13, JIS SUS 410, SS14 2302 (Sweden), B.S. 410 S 21, UNS S41000, AMS 5504, AMS 5505, AMS 5591, AMS 5613, AMS 5776, AMS 5821, ASME SA194 (6), ASME SA240, ASME SA268, ASME SA479, ASTM A176, ASTM A193, ASTM A194, ASTM A240, ASTM A276, ASTM A314, ASTM A473, ASTM A479, ASTM A493, ASTM A511, martensitic, ASTM A580, FED QQ-S-763, FED QQ-W-423, MIL SPEC MIL-S-862, SAE J405 (51410), B.S. En. 56 A, B.S. ANC 1 Grade A (U.K), SAE J412 (51410), DIN 1.4006, AFNOR Z 10 C 13, AFNOR Z 10 C 14 (France), ISO 683/13 3

| Component | Wt. %    |
|-----------|----------|
| C         | Max 0.15 |
| Cr        | 12.5     |
| Fe        | 86       |
| Mn        | Max 1    |
| P         | Max 0.04 |
| S         | Max 0.03 |
| Si        | Max 0    |

### Material Notes:

16 mm diameter bar, heated to 980°C for 30 min., oil quenched, test temperature plus 28°C temper for 2 hours

| Physical Properties          | Metric          | English                  | Comments       |
|------------------------------|-----------------|--------------------------|----------------|
| Density                      | <u>7.8 g/cc</u> | 0.282 lb/in <sup>3</sup> |                |
| <b>Mechanical Properties</b> |                 |                          |                |
| Tensile Strength, Ultimate   | <u>440 MPa</u>  | 63800 psi                |                |
| Tensile Strength, Yield      | <u>395 MPa</u>  | 57300 psi                | at 0.2% offset |
| Elongation at Break          | <u>25.5 %</u>   | 25.5 %                   | in 50 mm       |

## Electrical Properties

|                        |                                 |                 |                                   |
|------------------------|---------------------------------|-----------------|-----------------------------------|
| Electrical Resistivity | <a href="#">5.7e-005 ohm-cm</a> | 5.7e-005 ohm-cm | at 20°C, 0.000108 Ohm-cm at 650°C |
| Magnetic Permeability  | 700 - 1000                      | 700 - 1000      | annealed condition at RT          |

## Thermal Properties

|                                  |                              |                                   |                                    |
|----------------------------------|------------------------------|-----------------------------------|------------------------------------|
| CTE, linear 20°C                 | <a href="#">9.9 μm/m-°C</a>  | 5.5 μin/in-°F                     | from 0-100°C (32-212°F)            |
| CTE, linear 250°C                | <a href="#">11 μm/m-°C</a>   | 6.11 μin/in-°F                    | at 0-315°C (32-600°F)              |
| CTE, linear 500°C                | <a href="#">11.5 μm/m-°C</a> | 6.39 μin/in-°F                    | at 0-540°C, 11.7 μm/m-C at 0-650°C |
| Specific Heat Capacity           | <a href="#">0.46 J/g-°C</a>  | 0.11 BTU/lb-°F                    | from 0-100°C (32-212°F)            |
| Thermal Conductivity             | <a href="#">24.9 W/m-K</a>   | 173 BTU-in/hr-ft <sup>2</sup> -°F | at 100°C; 28.7 W/m-K at 500°C      |
| Melting Point                    | 1480 - 1530 °C               | 2700 - 2790 °F                    |                                    |
| Solidus                          | <a href="#">1480 °C</a>      | 2700 °F                           |                                    |
| Liquidus                         | <a href="#">1530 °C</a>      | 2790 °F                           |                                    |
| Maximum Service Temperature, Air | <a href="#">705 °C</a>       | 1300 °F                           | Continuous Service                 |
| Maximum Service Temperature, Air | <a href="#">815 °C</a>       | 1500 °F                           | Intermittent Service               |

## References for this datasheet.

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.