## Description

Grade **204 Cu/1.4597** is an austenitic stainless steel that is characterized by its lower nickel content compared to traditional stainless steels like 304, while incorporating a copper addition to enhance its properties. This alloy is designed to provide a cost-effective alternative with comparable mechanical and corrosion-resistant properties.

## Chemical Composition

The typical chemical composition of Grade 204 Cu is as follows:

| Element | Composition (%) |
|---|---|
| Carbon (C) | ≤ 0.10 |
| Silicon (Si) | ≤ 1.00 |
| Manganese (Mn) | 6.50 - 9.00 |
| Phosphorus (P) | ≤ 0.040 |
| Sulfur (S) | ≤ 0.030 |
| Nitrogen (N) | 0.10 - 0.30 |

| | |
|---|---|
| Chromium (Cr) | 15.50 - 17.50 |
| Copper (Cu) | 2.00 - 3.50 |
| Molybdenum (Mo) | ≤ 1.00 |
| Nickel (Ni) | ≤ 3.00 |

## Mechanical Properties

The mechanical properties of Grade 204 Cu are as follows:

| Property | Value |
|---|---|
| Yield Strength (Rp0.2) | 245 MPa (min) |
| Ultimate Tensile Strength (Rm) | 560 - 780 MPa |
| Elongation (A5) | 40% (min) |
| Hardness (HB) | 100 (max) |

## Thermal & Physical Properties

Grade 204 Cu exhibits the following thermal and physical properties:

| Property | Value |
|---|---|
| Density | 7.81 g/cm³ (0.282 lb/in³) |
| Thermal Conductivity | 15.0 W/(m·K) at room temperature |
| Specific Heat | 496 J/kg·K |
| Coefficient of Thermal Expansion | 17.1 µm/(m·°C) |
| Melting Point | Approximately 1450°C |

## Other Designations

- UNS S20430
- AISI 204Cu
- EN 1.4597

## Fabrication and Heat Treatment

- Fabrication Methods: Grade 204 Cu can be processed through standard methods such as hot and cold working. It is particularly suitable for wire drawing and forming.
- Heat Treatment: This alloy is non-hardenable by heat treatment. Solution annealing is recommended at temperatures between 1000°C and 1100°C, followed by air or water cooling.

## Applications

Grade 204 Cu is versatile and suitable for various applications, including:

- Automotive components
- Food processing equipment
- Chemical processing
- Electrical and electronic parts
- Construction materials

## Supplied Form

Grade 204 Cu is typically supplied in various forms including:

- Wire
- Bars
- Coils

## Features

- Corrosion Resistance: Comparable to Type 304 stainless steel, with good resistance to a variety of corrosive environments.
- Formability: Excellent workability and formability, making it suitable for complex shapes and applications.
- Cost-Effectiveness: Lower nickel content results in reduced material costs while maintaining desirable mechanical properties.

Grade 204 Cu/1.4597 is an excellent choice for applications requiring a balance of strength, formability, and corrosion resistance, making it a valuable material in modern manufacturing.