

**TECHNICAL DATA SHEET**

# Stainless steel type S

**General notes:**

- » **Martensitic higher carbon steel** (Material number 1.4034, DIN X46Cr13, AISI number 420)
- » contains from 12.5 to 14.5 wt% chromium
- » magnetizable
- » can be hardened by heat treatment, forming should be done in the annealed condition
- » less resistant to corrosion than the austenitic or ferritic grades
- » used where strength and/or hardness are of primary concern and where the environment is relatively mild from a corrosive standpoint
- » typical applications include tweezers and cutting tools for the electronic industry, watch-makers, jewelers and laboratory and medical applications in mild aggressive chemical environments

## Composition

| Component | Wt. %     | Component | Wt. % | Component | Wt. %     |
|-----------|-----------|-----------|-------|-----------|-----------|
| <b>C</b>  | 0.43-0.50 | <b>Si</b> | ≤1.0  | <b>Mn</b> | ≤1.0      |
| <b>P</b>  | ≤0.04     | <b>S</b>  | ≤0.03 | <b>Cr</b> | 12.5-14.5 |

## Mechanical properties

|                            |                             |
|----------------------------|-----------------------------|
| State                      | <b>annealed</b>             |
| Density                    | <b>7.7 g/cm<sup>3</sup></b> |
| Hardness, Vickers          | <b>680 HV</b>               |
| Tensile strength, ultimate | <b>615-625 MPa</b>          |
| 0.2% Yield stress          | <b>≥300 MPa</b>             |
| Modulus of elasticity      | <b>215 GPa</b>              |

## Thermal properties

|                               |                     |                   |
|-------------------------------|---------------------|-------------------|
| Coef. of lin. therm expansion | <b>10.5 E-6/°C</b>  | <i>20°C-100°C</i> |
| Coef. of lin. therm expansion | <b>11.5 E-6/°C</b>  | <i>20°C-300°C</i> |
| Specific heat capacity        | <b>0.46 J/(g K)</b> |                   |
| Thermal conductivity          | <b>30 W/(m K)</b>   |                   |

## Electrical properties

|             |                        |
|-------------|------------------------|
| Resistivity | <b>0.55 E-4 Ohm.cm</b> |
|-------------|------------------------|