## PRECIPITATION HARDENING STEEL

# 1.4543 (X3CrNiCuNbTi13-7)

Excellence in Specialty Steel

### Material Designation

| | |
|---|---|
| 1.4543 | DIN |
| S45500 | UNS |
| XM-16 | AISI |

### Standards

ASTM F899
ASTM A564/A564M

### Chemical Composition Mass-%

| | C | Si | Mn | P | S | Cr | Ni | Cu | Nb+Ta | Ti | Mo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| min. | - | - | - | - | - | 11,0 | 7,5 | 1,5 | 0,10 | 0,9 | - |
| max. | 0,03 | 0,5 | 0,5 | 0,015 | 0,015 | 12,5 | 9,5 | 2,5 | 0,50 | 1,4 | 0,5 |

Customer specific restrictions upon request

### Properties

1.4543 is a precipitation hardenable chromium-nickel-steel with high corrosion resistance.
The grade is treated by vacuum induction melting and vacuum arc remelting technology for highest cleanliness.
The corrosion resistance can be further improved by surface polishing.

### Application Area

High mechanical loads (stress and wear) in corrosive environments.

### Typical Applications

- Surgical instruments
- Dental drills
- Cutting tools
- Mechanical engineering

### Delivery Condition

- solution annealed (+AT), max. 331 HBW
- solution annealed and cold drawn

### Mechanical Properties acc. ASTM A564/A564M

| Condition ASTM | Yield strength [N/mm²] | Tensile strength [N/mm²] | Elong. [%] | Hardness [HBW] | [HRC] |
|---|---|---|---|---|---|
| H1000 | ≥ 1275 | ≥ 1415 | ≥ 10 | ≥ 363 | ≥ 40 |
| H950 | ≥ 1415 | ≥ 1515 | ≥ 10 | ≥ 415 | ≥ 44 |
| H900 | ≥ 1515 | ≥ 1620 | ≥ 8 | ≥ 444 | ≥ 47 |

### Heat Treatment Guideline Values

| | Condition | Temperature [°C] / Duration | Cooling medium |
|---|---|---|---|
| Solution annealing | | 815 – 845 | Air |
| Precipitation hard. | H1000 | 540 / 4h | Air |
| Precipitation hard. | H950 | 510 / 4h | Air |
| Precipitation hard. | H900 | 480 / 4h | Air |

### Quality

- ISO 9001
- ISO 14001
- ISO 50001
- Approvals acc. to standards like ABS, BV, DNV ...
- Customer specific approval certificates

### Innovation

- Fully automated ultrasonic testing up to dia. 1000 mm
- $CO_2$-reduction by innovative heat treatment solutions

### Flexibility

- Product range from fine wire to forging
- Directly from stock close at hand

### Individuality

- Dimensions
- Tolerances
- Surface qualities
- Delivery conditions

### Your personal contact:

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