

Maraging C300

Maraging C300 is an age-hardenable (maraging) iron-nickel steel combining ultra-high strength, toughness and resistance to crack propagation. The alloy is well suited to applications where heat treatment distortion and dimensional changes must be minimized and where high fracture toughness is required. The 18% nickel maraging steels offer a unique combination of properties not available from conventional low alloy ultra-high strength steels.

It is characterized by:

- high strength and high strength-to-weight ratio
- high notched strength
- maintains high strength up to at least 350°C
- high impact toughness and plane strain fracture toughness
- good processing and fabrication characteristics, e.g. amenable to hot and cold deformation, excellent weldability, good machinability

Chemical Composition, %

| element | Ni | Co | Mo | Fe | Cr | Cu | Al | Ti | C | Mn | Si | P | S |
|---------|------|------|------|----|------|------|------|------|------|------|------|------|------|
| min. | 18.0 | 8.50 | 4.60 | 余 | | | 0.05 | 0.50 | | | | | |
| max. | 19.0 | 9.50 | 5.20 | | 0.50 | 0.50 | 0.15 | 0.80 | 0.03 | 0.10 | 0.10 | 0.01 | 0.01 |

chemical Composition according to SAE AMS. Some compositional limits of other specifications may vary slightly.

Designation and standards

| National Standards | Material designation | Forgings | Rod and bar | Plate and sheet |
|--------------------|----------------------|---------------|---------------|-----------------|
| ASTM | UNS K93120 | A579 Grade 72 | A579 Grade 72 | A538 Grade 72 |
| MIL | C300 | MIL-S-46850D | MIL-S-46850D | MIL-S-46850D |
| SAE | 18Ni1900 | AMS6514 | AMS6514 | |

Density 8.0g/cm³

Corrosion resistance

- corrosion in a uniform manner and rust-covered in atmospheric exposure
- corrosion similar with low-alloy high-strength steels in seawater
- susceptible to pitting in tap water and some neutral salt solutions
- substantially greater resistance to oxidation in air at 540°C than the 5% chromium tool steel

Applications

Typical applications are:

- aircraft forgings (e.g. undercarriage parts, arrestor hooks, ejector release units)
- punches and die bolsters for cold forging
- extrusion press rams and mandrels
- aluminum die-casting and extrusion dies
- cold reducing mandrels in tube production
- zinc-base alloy die-casting dies

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