

Typical chemical composition (%)

| C | Cr | Ni | Si | Mn | Fe |
|-------------|---------|----------|--------|--------|--------|
| 0.25 - 0.35 | 13 - 14 | 0.5 max. | 1 max. | 1 max. | Matrix |

Normalized designation

| AFNOR | EN | DIN |
|-------------|-------------|--------|
| Z30 C13 - M | GX 30 Cr 13 | 1.4028 |

Microstructure

Mainly martensitic, with carbides ; a little residual austenite.

Elaboration

The SGS-X13 alloy is melted in an induction furnace with an argon shroud. It is cast in sand moulds or ceramic shells.

Heat treatment

Quenching at 1 000°C ; tempering at 680°C.

Mechanical properties

| Rp 0.2 (MPa) | Rm (MPa) | A (%) |
|--------------|----------|-------|
| 600 | 800 | 17 |

Hardness

220 - 270 HB.

Use at high temperature

The high level of chromium in this steel makes it resistant to excessive corrosion. Thus it is an ideal choice for use at high temperature. Nevertheless this use is limited to temperatures where the alloy does not undergo metallurgical transformation (less than 400°C).

Machinability and polishing

Cutting speed : 100 - 130 m/min (with M-type carbide tooling).
This alloy is easy to polish.

Weldability

Not suitable for welding.

Physical properties

Thermal conductivity at 20°C : 30 W.m⁻¹.K⁻¹
Thermal capacity at 20°C : 460 J.kg⁻¹.K⁻¹
Thermal expansion coefficient (20°C) : 11 10⁻⁶ K⁻¹
Magnetic

Fields of use

Moulds for the glass industry ; pumps and gates for the food-processing industry, the hydraulics industry and other industries.

The SGS-X13 stainless steel is used when good mechanical properties and moderate oxidation resistance are needed. Thanks to its hardness, this alloy is extremely abrasive resistant.

Contact

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