

## Austenitic refractory steel SGS-R35-25

The refractory alloy **SGS-R35-25** is used in the hot forming process for the aircraft industry.



### Designations

SEVA designation: **SGS-R35-25**

Standard designation:

**EN** X40NiCrNb35-25 (NF EN 10295)

**DIN** 1.4852



### Chemical analysis (in%)

C	Ni	Cr	Si	Nb	Mn	Mo	Fe
0.3-0.5	33-36	24-27	1-2.5	0.8-1.8	<2	<0.5	Bal.



### Mechanical properties

Hardness: 400 HB

Tensile tests at room temperature:

Rp0,2 (MPa)	Rm (MPa)	A (%)
240	400	4

Young's modulus at 20°C : E = 200 GPa

Hot tensile tests:

Temperature	750°C	800°C	850°C	900°C	950°C
Rp0,2 (in Mpa)	152	137	103	80	71
Rm (in Mpa)	279	211	152	117	80
A(%)	15-25	15-25	20-40	25-40	25-40



### Applications

#### Areas of use:

Aircraft industry

#### Maximum temperature of use:

800°C - 900°C

#### Types of parts produced:

- Tools for shaping titanium sheets by Hot Forming (HF) process
- Tools or industrial parts working at high temperature



### Standard structure

Austenitic matrix reinforced by precipitation of carbides.



## Physical properties

Density at 20°C : 8.0 g/cm<sup>3</sup>

Expansion coefficient  $\alpha$  in 10<sup>-6</sup> /°C :

Temperature (°C)	$\alpha$ (10 <sup>-6</sup> /°C)
400	16
800	17
1000	18



## Other properties

Magnetism: non-magnetic

Thermal conductivity  $\lambda$  in W.m<sup>-1</sup>.K<sup>-1</sup> at:

Temperature (°C)	$\lambda$ W.m <sup>-1</sup> .K <sup>-1</sup>
20	12.8
100	13
800	17
1000	27.7

Specific heat capacity at 20°C : 500 J.kg<sup>-1</sup>.K<sup>-1</sup>



## Production

SEVA produces the **SGS-35-25** alloy in an electric induction furnace under an argon gas protective atmosphere.

**Cast** in a sand mold.

Heat treatment: **mechanical reinforcement**.



## Compatible processes

	Compatibility	Remarks
Machining	●●●●○	Cutting speed recommended: 30 to 50 m/min
Polishing	●●●●○	
Hot isostatic pressing (HIP)	●●●●○	
Forging	●●●●○	
Welding	●●○○○	

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