

## Marketing description

Refractory alloy SGS-R35-25 is used in the Hot Forming process for the aerospace industry.

## Designations

SEVA designation: SGS-R35-25

Standard designation:

EN X40NiCrNb35-25 (NF EN 10295)

DIN 1.4852

## Chemical analysis (in%)

C : 0.3-0.5

Ni : 33-36

Cr : 24-27

Si : 1-2.5

Nb : 0.8-1.8

Mn : < 2

Mo : < 0.5

Fe : Bal.

## Mechanical properties

Hardness: 400 HB

Tensile tests at room temperature:

Rp0,2 (MPa)	Rm (MPa)	A (%)
240	440	4

Young's modulus at 20°C :  $E = 200 \text{ GPa}$

Hot tensile tests:

Temperature	750°C	800°C	850°C	900°C	950°C
Rp0,2 (MPa)	152	137	103	80	71
Rp1,0 (MPa)	279	211	152	117	80
Rm (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 :  $8.0 \text{ g/cm}^3$

Expansion coefficient  $\alpha$  in  $10^{-6} / ^\circ\text{C}$  :

Temperature (°C)	? ( $10^{-6}/^\circ\text{C}$ )
400	16
800	17
1000	18

## Other properties

Magnetism: non-magnetic

Thermal conductivity  $\lambda$  in  $\text{W.m}^{-1}.\text{K}^{-1}$  at:

Temperature (°C)	? $\text{W.m}^{-1}.\text{K}^{-1}$
20	12,8
100	13
800	17
1000	27,7

Capacité thermique à 20°C :  $500 \text{ J.kg}^{-1}.\text{K}^{-1}$

## 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	?????	Vitesse de coupe préconisée : 30 à 50 m/min
Polishing	?????	
Hot isostatic pressing (HIP)	?????	
Forging	?????	
Welding	?????	

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### **Alloy SGS-37-18**

**EN : GX40NiCrSiNb38-19**

Excellent resistance to high-temperature oxidation.

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## **Alloy SGS-R25-20**

EN: X15CrNiSi25-21 (NF EN 10095)

Excellent oxidation resistance due to its chromium content.

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[Image](#)



## **Alloy SGS-30-55**

**EN: GX70NiCrW55-30-7**

Excellent characteristics at high-temperature: creep, oxidation and corrosion resistance.

23 May 2023