

## Refractory alloy **SGS-R26-52**

The nickel-based refractory alloy **SGS-R26-52** combines excellent creep resistance and good hot chemical properties. Its characteristics make it a preferred candidate for the most difficult applications.



### Designations

SEVA designation: **SGS-R26-52**

Standard designation: (heat-resistant cast steels)

**AFNOR** Z 45 NCW 45.25-M (NF A 32-057)

**EN** G-NiCr28W (NF EN 10295)

**DIN** 2.4879



### Creep resistance

Values for a stress applied during 10,000 hours at high temperature:

	700°C	800°C	900°C	1000°C
Strain of 1% (MPa)	-	45	25	11
Breaking time (MPa)	84	50	29	14



### Chemical Analysis (in%)

Standardized: (standard DIN 17465 ; SEW 595)

Fe	C	Si	Mn	P	S
Bal.	0,35 - 0,50	0,50 - 2,00	≤ 1,50	≤ 0,035	≤ 0,030

S	Cr	Ni	W
0,030	27,0 - 30,0	47,0 - 50,0	4,00 - 5,50



### Mechanical properties

Hardness: 207 HB

Tensile test at room temperature:

Rp0,2 (MPa)	Rm (MPa)	A (%)
240	440	3

Tensile test between 600°C and 920°C:

	Rp0,2 (MPa)	Rp1,0 (MPa)	Rm (MPa)	E (GPa)	A (%)	Z (%)
600°C	235	325	442	145	5	8
760°C	190	233	347	143	16	22
920°C	104	123	186	117	25	45



### Applications

#### Areas of use

- Industry
- Cement works
- Petrochemical industry
- Glass industry

#### Maximum temperature of use

1150°C

#### Types of parts produced

- Miscellaneous toolings
- Thermocouple envelopes



### Standard structure

Austenitic, nickel-based matrix with a network of tungsten and chromium carbides.



## Physical Properties

Density at 20°C: 8,2

Approximate melting range: 1260-1360°C

Linear expansion coefficient :  $\alpha$  in  $10^{-6}/^{\circ}\text{C}^{-1}$  between 20°C and

200°C	400°C	600°C	800°C	1000°C	1050°C
14,2	15,1	16,3	17,4	18,5	18,9



## Other properties

Magnetism: Non-magnetic

Thermal conductivity in  $\text{W}\cdot\text{m}^{-1}\cdot^{\circ}\text{C}^{-1}$

20°C	100°C	800°C	1000°C
11,0	11,3	30,6	36,1

Mass thermal capacity at 20°C:  $C_p = 500 \text{ J}\cdot\text{Kg}^{-1}\cdot^{\circ}\text{C}^{-1}$

Mass thermal capacity between 40°C and 975°C :  
 $C_p$  en  $\text{J}\cdot\text{Kg}^{-1}\cdot^{\circ}\text{C}^{-1}$

40°C	100°C	200°C	300°C	400°C	500°C
409	457	477	486	501	522

600°C	700°C	800°C	900°C	975°C
575	584	590	601	609



## Production

SEVA produces the **SGS-R26-52** alloy in an electric induction furnace, under an Argon gas protective atmosphere.

Cast in a sand mold.

Heat treatment: **Mechanical reinforcement by carbide precipitation.**



## Compatible processes

	Compatibility
Polishing	● ● ● ● ●
Welding	● ● ● ● ●
Hot isostatic pressing (HIP)	● ● ● ● ○
Forging	● ● ● ● ○

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