Alloy SGS-R26-52

Refractory superalloy with excellent creep resistance and good hot chemical properties.

Marketing description

The nickel-based refractory alloy **SGS-R26-52** combines excellent creep resistance with 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

Chemical Analysis (in%)

Fe : Bal
C : 0.35-0.50
Si : 0.50-2.00
Mn : ≤1.50
P : ≤0.035
S : ≤0.030
Cr : 27.0-30.0
Ni : 47.0-50.0
W :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

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

Creep resistance between 600°C and 920°C:

	700°C			760°C			920°C		
Stress (MPa)	300	325	350	120	141	162	50	55	60
Breaking time (h)	>84	63	11	<67	22	9	<112	50	30

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 : α in 10-6/°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 $W.m^{-1}.°C^{-1}$

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

Mass thermal capacity at 20°C : Cp = 500 $J.Kg^{-1}.°C^{-1}$

Mass thermal capacity between 40°C and 975°C: Cp en $J.Kg^{-1}.°C^{-1}$

40°C	100°C	200°C	300°C	400°C	500°C	600°C	700°C	800°C	900°C	975°C
409	457	477	486	501	522	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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These alloys might interest you

Image

Alloy SGS-30-55

EN: GX70NiCrW55-30-7

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

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Image

Alloy SGS-625

EN: NiCr22Mo9Nb

Excellent characteristics at high-temperature and good tenacity at very low temperature.

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Alloy SGS-R18-09

EN: GX25CrNiSi18-9 (NF EN 10295)

Economical alternative to SGS-R25-20 alloy at lower temperatures.

23 May 2023