

Alloy **SGS-R18-09**

Austenitic refractory steel is an economical alternative to SGS-R25-20 alloy



Marketing description

Refractory alloy **SGS-R18-09** is an economical alternative to SGS-R25-20 when the temperature demands are lower.

Designations

SEVA Designation : SGS-R18-09

Standard designations:

AFNOR Z 25 CNS 18-09 - 02- M (NF A 32-057)

EN GX25CrNiSi18-9 (NF EN 10295)

DIN 1.4825

Chemical Analysis

e : Bal.

C : 0.15 - 0.35

Cr : 17 - 19

Ni : 8 - 10

Si : 0. - 2.5

Mn : 2 max

Mechanical properties

Hardness: 170 HB

Tensile test at room temperature:
(Values without thermal treatment)

Rp0,2 (MPa)	Rm (MPa)	A (%)
230	450	15

Creep resistance

Breaking stress N/mm² (MPa) at:

	600°C	700°C	800°C	900°C
Time 100 h	-	120	60	40
Time 1 000 h	220	90	50	30
Time 10 000 h	77	42	20	9

Applications

Areas of use

- Glass industry

- Cement works
- Metallurgy
- Petrochemical industry
- Glass toolings

Maximum temperature of use

900°C

Types of parts produced

- Glass process toolings
- Furnace parts

Standard structure

Austenitic with carbide precipitation.

Physical Properties

Density at 20°C: 7,8

Approximate melting range: 1370-1430°C

Thermal expansion coefficient: α en 10^{-6} K⁻¹ between 20°C and:

400°C	800°C	1000°C
17,4	18,5	18,8

Other properties

Magnetism: Non-magnetic

Thermal conductivity λ en W.m⁻¹.K⁻¹ à :

20°C	100°C	800°C	1000°C
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14,8	15,5	26,0	30,0
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Thermal mass capacity at 20°C : $C_p = 500 \text{ J.Kg}^{-1}.\text{K}^{-1}$

Production

SEVA produces the SGS-R18-09 alloy in an induction furnace under an Argon gas protective atmosphere.

Cast in a sand mold.

Heat treatment: homogenization.

Compatible processes

	Compatibility	Remarks
Machining	?????	Cutting speed: 80 - 110 m/min
Polishing	?????	
Welding	?????	Electrode or TIG
Hot isostatic pressing (HIP)	?????	
Forging	?????	

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Alloy SGS-R25-20

EN: X15CrNiSi25-21 (NF EN 10095)

Excellent oxidation resistance due to its chromium content.

23 May 2023

[Image](#)

Alloy SGS-X19-11L

EN : GXCrNiMo19-11-2

Very good resistance to corrosion in a wide variety of environments (marine, acid, etc.).

05 June 2023

[Image](#)

Alloy SGS-X13

EN: GX 30 Cr 13 (NF EN 10283)

Due to its hardness, it also resists to abrasion.

23 May 2023