

Refractory steel **SGS-R18-09**

The **SGS-R18-09 refractory steel** can be a good economical alternative to the SGS-R25-20 when used at lower temperatures.



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 (in%)

Fe	C	Cr	Ni	Si	Mn
Bal.	0,15 - 0,35	17 - 19	8 - 10	0,5 - 2,5	2 maxi



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
14,8	15,5	26,0	30,0

Thermal mass capacity at 20°C :

$C_p = 500 J.Kg^{-1}.K^{-1}$



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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