

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 (en%)

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) for:

	600°C	700°C	800°C	900°C
Durée 100 h	-	120	60	40
Durée 1 000 h	220	90	50	30
Durée 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 with an argon shroud.

Cast in a sand mold.

Heat treatment: **homogenization**.

**Compatible processes**

	Compatibilité	Remarques
Machining	● ● ● ● ●	Cutting speed: 80 - 110 m/min
Polishing	● ● ● ● ●	
Welding	● ● ● ● ●	Electrode ou TIG
Hot isostatic pressing (HIP)	● ● ● ● ○	
Forging	● ● ● ● ○	

The information in this document is an average and not a guaranteed maximum or minimum value. The applications indicated for the grades described are for guidance only to assist the reader in his or her personal evaluation and are not warranties, expressed or implied, of suitability for any specific purpose. Saint-Gobain SEVA's liability shall in no case be extended to the choice of product or to the consequences of this choice.

**Saint-Gobain SEVA**

43 rue du Pont de Fer - BP 10176
71105 Chalon-sur-Saône cedex
France

Tél. : + 33 3 85 47 25 88
+ 33 3 85 47 28 06

at-seva@saint-gobain.com