

Nickel based superalloy SGS-625

The SGS-625 has excellent **high temperature properties** (creep, oxidation and corrosion resistance), **good toughness at very low temperatures** and **high tensile strength**.
Excellent pitting resistance in marine environment.



Designations

SEVA designation: **SGS-625**

Standard designation:

AFNOR NC 22 Dnb

EN NiCr22Mo9Nb

DIN 2,4856

USA (AISI) N26625-CW6MC (ASTM A 494)



Chemical analysis (in%):

Cr	Fe	Mo	Nb	C	Mn
20-23	<5	8-10	3.15-4.15	0.1	<0.5

Si	P	S	Al
<0.5	<0.015	<0.015	<0.4



Mechanical properties

Hardness: 180-250 HB

Tensile tests at room temperature:

Rp0,2 (MPa)	Rm (MPa)	A (%)
275	550-700	20-40

Young's modulus at 20°C : E = 200 GPa



Applications

Areas of use:

- Aircraft industry
- Shipbuilding
- Petrochemicals
- Cryogenics
- Nuclear industry
- Industrial application at high temperature

Maximum temperature of use:

1000°C

Types of parts produced:

Various foundry parts



Standard structure

Austenitic nickel matrix reinforced with Nb and Cr.



Physical properties

Density at 20°C : 8.4g/cm³

Approximate melting range: 1290-1350°C

Expansion coefficient α in 10⁻⁶ /°C :

Temperature (°C)	α (10 ⁻⁶ /°C)
93	12.8µm/m.°C



Other properties

Magnetism: paramagnetic

Thermal conductivity at 20°C : 9.8 λ W.m⁻¹.K⁻¹

Specific heat capacity at 20°C : 0.41 Cp en J.g⁻¹.°C⁻¹

Thermal conductivity λ in W.K⁻¹.m⁻¹
at different temperatures:

Temp.	-157°C	21°C	38°C	93°C	204°C	316°C
λ	7.2	9.8	10.1	10.8	12.5	14.1

Temp.	427°C	538°C	649°C	760°C	871°C	982°C
λ	15.5	17.5	19	20.8	22.8	25.2



Production

SEVA produces the **SGS-625** alloy in an electric induction furnace under an argon gas protective atmosphere.
Cast in a sand mold.



Compatible processes

	Compatibility	Remarks
Machining	●●●○○	Cutting speed recommended: 30 to 50 m/min
Polishing	●●●○○	
Hot isostatic pressing (HIP)	●●●●●	
Forging	●●●●○	
Welding	●●○○○	Electrode or TIG.

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