

Superalloy SGS-30-55

The **SGS-30-55 nickel-based superalloy** has excellent high temperature properties: creep strength, oxidation and corrosion resistance. It is used for industries of material processing (shaping of titanium sheets by SPF process and glass industry), in aggressive environment, under high temperature and high mechanical stress.



Designations

SEVA designation: **SGS-30-55**

Standard designation:

Equivalent EN : **GX70NiCrW55-30-7**



Chemical analysis (in%)

The SGS-30-55 is a nickel-based superalloy elaborated under SEVA's own standard and know-how.

Ni	Cr	W	C
Bal.	30	7	0,7



Mechanical properties

Hardness: 240 - 300 HB

Tensile tests at room temperature:

Rp0,2 (MPa)	Rm (MPa)	A (%)
340	520	2

Young's modulus at 20°C : E = 170 GPa

Hot tensile tests:

	300°C	600°C	750°C	850°C	900°C	950°C	1000°C	1050°C
RP 0,2 (MPa)	320	300	200	185	180	103	120	100
Rm (MPa)	420	400	350	290	230	159	155	125
A%	-	-	5-10	5-15	10-25	10-30	-	-



Creep resistance

Creep resistance between 660°C and 1050°C:

	600°C	700°C	1000°C	1050°C
Stress (MPa)	250	150	35	35
Time to rupture (h)	378	339	378	100
A (%)	3,6	6,3	5,0	-



Applications

Areas of use:

- Glass industry
- Aircraft industry
- Heat treatment furnaces
- Cement works
- Petrochemical industry
- Miscellaneous toolings

Maximum temperature of use:

1200°C

Types of parts produced:

- Tools for the glass industry
- Toolings for the aircraft industry: moulds to shape titanium sheets by Super-Plastic Forming SPF process



Standard structure

Austenitic, nickel-based matrix with a network of tungsten and chromium carbides.

**Physical properties**

Density at 20°C : 7,8

Approximate melting range: 1310 - 1370°C

Expansion coefficient α in $10^{-6}/^{\circ}\text{C}$:

Temperature (°C)	α ($10^{-6}/^{\circ}\text{C}$)
300	12,9
400	13,7
500	14,0
600	14,6
700	15,2
800	15,7
900	16,1
1000	16,4

**Other properties**

Magnetism: non-magnetic

Thermal conductivity λ in $\text{W.K}^{-1}.\text{m}^{-1}$
and specific heat capacity C_p in $\text{J.g}^{-1}.\text{C}^{-1}$
at different temperatures:

	Amb.	202°C	402°C	602°C	802°C
λ	5,91	12,19	15,43	21,22	24,91
C_p	-	0,489	0,509	0,603	0,672

	900°C	1002°C	1172°C
λ	22,65	28,74	36,43
C_p	-	0,706	0,834

**Production**SEVA produces the **SGS-30-55** alloy in an electric induction furnace under an argon gas protective atmosphere.**Cast** in a sand mold.Heat treatment: **mechanical reinforcement****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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