

## Foundry resources and know-how

As the internal toolmaker and 100% subsidiary of the Saint-Gobain group, SEVA has an integrated foundry specializing in the casting of technical parts in stainless steels, refractory steels, high-alloyed steels, nickel-based alloys, cobalt-based alloys and superalloys. With an integrated metallurgy laboratory, we develop and produce our own grades according to our customers' requirements.



### Specialty

Turnkey projects, from the study of the foundry to the assembly through machining, all in an integrated digital chain.



### Manufacturing

#### Alloys

- Stainless steels (304, 316), low carbon (304L, 316L), special stainless steels resistant to abrasion and/or seizing,
- High-alloyed steels (25-20, 18-10, duplex, 17-4 PH),
- Refractory nickel-based alloys (G-NiCr28W, GX70Ni-CrW55-30-7),
- Self-lubricating nickel-based alloy (ASTM A494 Gr.CY5SnBiM),
- Cobalt-based alloys,
- Nickel cast iron (Ni-hard, Ni-resist)

#### Parts characteristics

	Mini	Maxi*
Unit weight (kg)	0,1	2 000
Length (mm)	10	2 000
Width (mm)	10	1 000
Diameter (mm)	10	1 200

\*Beyond the maximum: please contact us.

#### Lot sizes

Production quantities can vary from single parts and small to medium series.

#### Types of parts produced

Special process equipment, die forms, pump elements, molds, tools, impellers, standard round bars and bushings, etc...



### Design office resources

#### Integrated design office

Methods department, metallurgy laboratory, design, simulation tools, calculations, tests.

#### Softwares

Catia V5, Solidworks, Magma V5, NC Simul, VX inspect, VX Model, Thermocalc.



### Foundry resources

#### Casting process

Gravity casting in sand molds.

#### Patterns production

Integrated & subcontracted.

#### Molding and core-making methods

Manual and semi-mechanized, cold box process, 3D printed sand molding.

#### Melting capacities

6 MF induction furnaces of latest generation with capacities ranging from 600 kg to 1800 kg.

#### Finishing

- Manual,
- Automatic (robotized cell),
- Cobotized.

#### Surface treatments

Shot-blasting, sandblasting, chrome-plating, polishing, thermal degreasing, scouring, etc...

#### Thermal treatments

2 furnaces with air quenching.



### Machining resources

Computer Numerically Controlled (CNC), high speed, milling 3-axis and 5-axis, turning, multifunctional and robotized machining centers, electro-erosion, polishing and electron beam drilling.

Parts up to 30 tons and 4 meters in length.



### Controls

Dimensional (conventional, three-dimensional, 3D scanning), structural (macrography, micrography (SEM)), NDT (roughness, liquid penetrant testing (LPT), US, radiography, waterproofing), spectrometry, mechanical controls (traction, low and high temperature creep), compression, shear, hardness, etc...



Stainless steels

SEVA designation	SGS-X19-11L	SGS-R18-09	SGS-R25-20	SGS-37-18
<b>Alloy type</b>	Austenitic refractory steel			
<b>Description</b>	Very good <b>resistance to corrosion</b> in a wide variety of environments (marine, acid, etc.). Very similar to 316L, but with slightly better corrosion resistance.	<b>Economical</b> alternative to SGS-R25-20 alloy at lower temperatures.	Excellent <b>oxidation resistance</b> due to its chromium content. Good hot-working properties enabling a wide range of applications.	Excellent <b>oxidation resistance</b> at high temperatures.
<b>Standard designation</b>	<b>AFNOR</b>	Z6 CND18.12N	Z25CNS18-09-02-M(NFA32-057)	Z15CNS25-20-M (NF A 32-057)
	<b>EN</b>	GXCrNiMo19-11-2	GX25CrNiSi18-9 (NF EN 10295)	GX40NiCrSiNb38-19
	<b>DIN</b>	1.4409	1.4825	1.4841
	<b>USA</b>	316L	-	310
<b>Composition</b>	C : ≤0.03 Si : ≤ 1.5 Mn : ≤2 Ni : 9-12 Cr : 18-20 Mo : 2-2.5	Fe : Bal. C : 0.15 - 0.35 Cr : 17 - 19 Ni : 8 - 10 Si : 0. - 2.5 Mn : 2 max	Fe : Bal. C : 0.15 Mn : 2 Si : 2 Cr : 22 - 27 Ni : 18 - 22 P : 0.040 S : 0.030	C : 0.3-0.5 Ni : 36-39 Cr : 18-21 Nb : 1.2-1.8 Si : 0.75-2.5 Mn : ≤ 2 Fe : Bal
<b>Max temp of use</b>	450°C	900°C	900°C	900°C - 1000°C
<b>Area of use &amp; Types of parts produced</b>	<ul style="list-style-type: none"> <li>• Shipbuilding</li> <li>• Petrochemicals</li> <li>• Chemicals</li> <li>• Nuclear industry</li> <li>• Food and pharmaceuticals industries</li> </ul>	<ul style="list-style-type: none"> <li>• Glass industry</li> <li>• Cement industry</li> <li>• Petrochemicals</li> <li>• Metallurgy</li> </ul>	<ul style="list-style-type: none"> <li>• Cement industry</li> <li>• Petrochemicals</li> <li>• Metallurgy</li> <li>• Glass industry</li> <li>• Aircraft industry / Hot Forming HF toolings</li> </ul>	<ul style="list-style-type: none"> <li>• Aircraft industry / Super-Plastic Forming SPF toolings</li> <li>• Industries / Tools or industrial parts working at high temperatures</li> </ul>

SEVA designation	SGS-R35-25	SGS-X13	SGS-X23-24
<b>Alloy type</b>	Austenitic refractory steel	Martensitic stainless steel	Duplex stainless steel
<b>Description</b>	Used in <b>Hot Forming</b> process for the aircraft industry.	Used when good mechanical properties must be combined with relatively moderate corrosion exposure. Due to its hardness, it also <b>resists to abrasion</b> .	<b>Austenoferritic</b> , it benefits of higher corrosion resistance than common austenitic steels, as well as superior mechanical and abrasion resistance properties.
<b>Standard designation</b>	<b>AFNOR</b>	X 30 CR 13 -M (NF A 35-059)	X3CrNiMoN27-5-2
	<b>EN</b>	X40NiCrNb35-25 (NF EN 10295)	GX 30 Cr 13 (NF EN 10283)
	<b>DIN</b>	1.4852	1.4028
	<b>USA</b>	-	420
<b>Composition</b>	C : 0.3-0.5 Ni : 33-36 Cr : 24-27 Si : 1-2.5 Nb : 0.8-1.8 Mn : < 2 Mo : < 0.5 Fe : Bal.	Fe : Bal. C : 0.25 - 0.35 Cr : 13 - 14 Ni : 0.5 max Si : 1 max Mn : 1 max	Fe : Bal C : 0.1 max Cr : 23-27 Ni : 4.5-7 Si : 1 max Mn : 2 max Mo : 1.3-1.8 N : <0.2
<b>Max temp of use</b>	800°C - 900°C	750°C	300°C
<b>Area of use &amp; Types of parts produced</b>	<ul style="list-style-type: none"> <li>• Aircraft industry / Hot Forming HF toolings</li> <li>• Industries / Tools or industrial parts working at high temperatures</li> </ul>	<ul style="list-style-type: none"> <li>• Food industry</li> <li>• Hydraulics</li> <li>• Industry</li> <li>• Glass molds</li> <li>• Pumps and valves parts</li> </ul>	<ul style="list-style-type: none"> <li>• Paper, petrochemical and dyeing industries.</li> <li>• Pumps casings, impellers and shafts, valves</li> <li>• Parts subject to chemical, mechanical and abrasive stresses.</li> </ul>



Nickel based superalloy

SEVA designation	SGS-R26-52	SGS-30-55	SGS-625	SGS-75
<b>Alloy type</b>	Superalloy			
<b>Description</b>	Excellent <b>creep resistance</b> and good chemical properties. These characteristics make it a prime candidate for demanding applications.	Excellent characteristics at high-temperature: <b>creep, oxidation and corrosion resistance</b> . Used in transformation processes, in aggressive environments, as well as temperature and high mechanical stress.	Excellent characteristics at <b>high-temperature</b> and good tenacity at very <b>low temperature resistance</b> . Excellent resistance to pitting in marine environments.	High resistance to seizing in contact with stainless steels. <b>Stainless and self-lubricating</b> , recommended for the manufacture of moving parts in contact with stainless steels, without lubrication, with reduced clearance.
<b>Standard designation</b>	<b>AFNOR</b>	Z45NCW45.25-M (NF A 32-057)	-	NC 22 Dnb
	<b>EN</b>	G-NiCr28W (NF EN 10295)	GX70NiCrW55-30-7	NiCr22Mo9Nb
	<b>DIN</b>	2.4879	-	2.4856
	<b>USA</b>	-	-	N06625 (ASTM B 446)
<b>Composition</b>	Fe : Bal C : 0.35-0.50 Si : 0.50-2.00 Mn : ≤1.50 P : ≤0.035 S : ≤0.030 Cr : 27.0-30.0 Ni : 47.0-50.0 W : 4.00-5.50	Ni : Bal Cr : 30 W : 7 C : 0.7	C : 0.1 Cr : 20-23 Mo : 8-10 Nb : 3.15-4.15 Fe : <5 Mn : <0.5 Si : <0.5 P : <0.015 S : < 0.015 Al : <0.4 Ni : Bal.	Ni : Bal C : 0.05 max Cr : 11-14 Mo : 2-3.5 Si : 0.05 max Mn : 1. max Fe : 2 max Bi : 3-5 Sn : 3-5
<b>Max temp of use</b>	1150°C	1200°C	1000°C	140°C
<b>Area of use &amp; Types of parts produced</b>	<ul style="list-style-type: none"> <li>• Industry</li> <li>• Cement / Thermocouple</li> <li>• Petrochemical industry</li> <li>• Glass industry</li> </ul>	<ul style="list-style-type: none"> <li>• Glass industry</li> <li>• Aircraft industry / Super-Plastic Forming SPF toolings</li> <li>• Heat treatment furnaces</li> <li>• Cement industry</li> <li>• Petrochemical industry</li> </ul>	<ul style="list-style-type: none"> <li>• Aircraft industry</li> <li>• Shipbuilding</li> <li>• Petrochemicals</li> <li>• Cryogenics</li> <li>• Nuclear industry</li> <li>• Industrial applications at high temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Chemistry</li> <li>• Pharmaceuticals</li> <li>• Food industry</li> <li>• Nuclear industry</li> </ul>



Other alloys

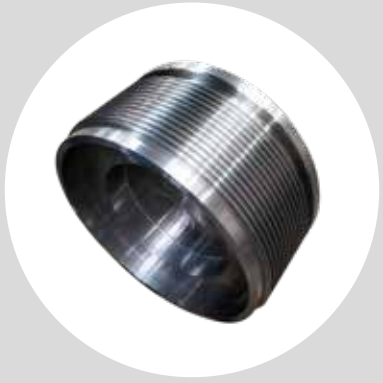
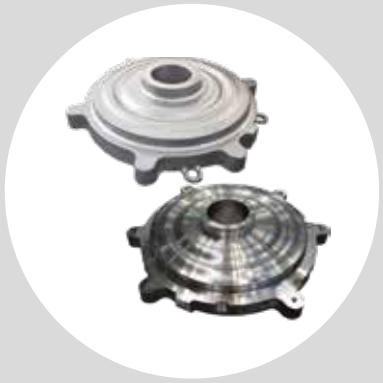
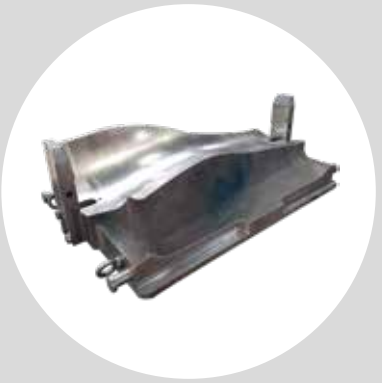
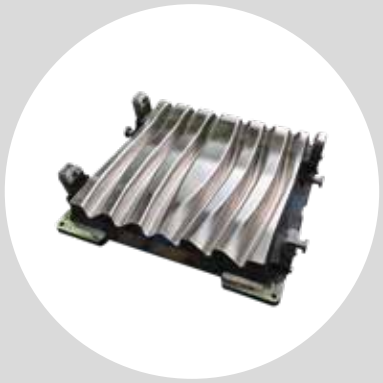
Without being exhaustive, the alloys list presented here shows the typical alloys produced by Saint-Gobain SEVA.

We also have expertise in the production and development of many other alloys, particularly **Cobalt-based alloys** and **Nickel cast irons**. We can also develop other grades according to customers requests.

Find more information in our dedicated technical data sheets:



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.



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