

## ■ MATERIALS

We are not just considered products supplier but also materials supplier; huge efforts and investments are continuously spent to improve our technical know-how, which is completely at our customers disposal.

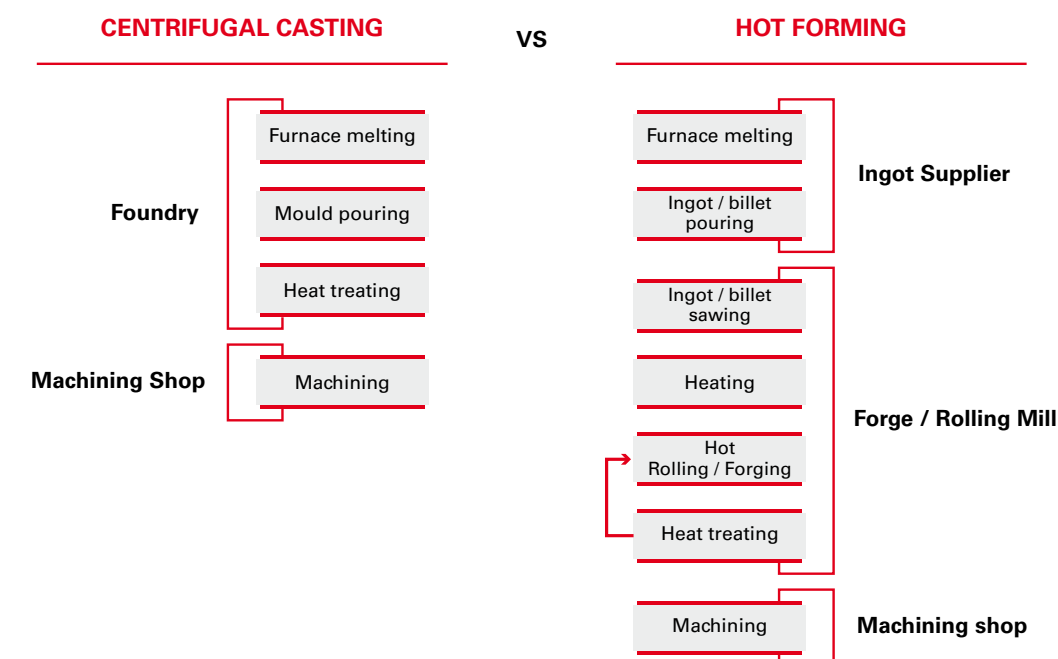
Norsok qualified for production of duplex and superduplex, 6Mo, Inconel and Hastelloy alloys.

For complete list, material properties and qualifications lists visit our website [www.fondinox.com](http://www.fondinox.com).

SS CATEGORY	CAST DESIGNATION	HOT FINISHED EQUIVALENT
MARTENSITIC	CPCA15, CA40, CA6NM, CB7Cu-1	410, 420, 13-4, 17-4PH
AUSTENITIC	CPF8/3, CPF8C, CPF8M/3M, CG8M/3M, CG6MMN, CF10SMNN	304/304L, 347, 316/316L, 317/317L, NITRONIC 50, NITRONIC 60
SUPERAUSTENITIC	CN7M, CK3MCuN, CN3MN, 1.4538, 654SMO	20Cb3, 254SMO, AL6XN, 904L, 654SMO
DUPLEX	2304, GR 2A, GR 3A, GR 4A, GR 5A, GR 6A, GR 7A	2304, S32750, 329, 2205, 2507, ZERON100, 2707
NICKEL BASED	M35-1, CW-6MC, CX2MW, CW2M, N7M, CY40, CU5MCuC, CZ100	MONEL 400, INCONEL 625, HASTELLOY C22, C4, B2, INCONEL 600, INCOLOY 825, NICKEL 201
HEAT RESISTANT	HE, HF, HH, HK, HT, CT15C, CY40, 50Cr50NiNb	312, 302, 309, 310, 330, INCOLOY 800H, INCONEL 600, INCONEL 657
PRODUCED UNDER LICENCE	HASTELLOY C4, C22, C2000, C276, C22HS, B2, B3, G30, G35, SANDVIK SAF2304, SAF2205, SAF2507, 2RK65, SANICRO28, OUTOKUMPU 153MA, 253MA, 353MA, 254SMO, 654SMO	

## ■ CENTRIFUGAL CASTING: EASIER AND FASTER

Centrifugal casting, compared to hot or cold forming (forging or rolling), is a very simple process which is totally performed in-house and guarantees short lead times, energy savings and cost savings.



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**Centrifugally Cast Items:  
balls, rings, cones, flanges**

## ■ FONDINOX

Fondinox has been producing stainless steel and nickel-based alloy castings for 50 years. During this time we have gained vast experience and introduced many innovations that have enabled us to become a leading producer of high value added castings which are used when reliability matters.

More than 30 years ago we expanded our production with the introduction of **centrifugal casting technology** which, thanks to the inherent advantages given by the process, allow us to react in a very quick and efficient way to the increasing and evolving requirements of the market.

**Near-net-shape centrifugal casting** is a technique introduced in our process where the initial part provides a quality surface finish and is close to the final (net) shape, reducing the need for machining and grinding and leading to cost and time savings.

Thanks to our **internal qualified machining shop** we are able to supply our finish machined components on short lead times.

## ■ REFERENCE SECTORS

Our centricast products find application in the following fields:

Application Field	Component
Oil and Gas	Balls for ball valves Wear and set rings Internal cages for valves Bushes for pumps Tubes for flowmeter and actuators
Mining	Jackets for hydraulic cylinders (actuators)
Metallurgy / Steel	Rolls for hot and cold rolling Sleeves for actuators in extrusion processes Conveyors for heat treating furnaces Tubes for O2 injection in recovery metal furnaces
Chemical	Drums Protection sleeves shaft Wear rings Cones and bodies for decanter
Food and Dairy	Wear rings Bushes and flanges
Ship building	Seat rings for diesel engine Shaft sleeve
Water treatment	Pipes and rings for desalination plants Pipes and rings for vertical pumps
Separation and filtering Industry	Decanters and separation system (oil, solid-liquid, slurry) Cylindrical body for high speed centrifuges
Pulp and paper	Rolls for pulp and paper plants
Glass	Wear rolls for glass processes
Cryogenic	Pipes for cryogenic fluids transport Rings, jackets for void pumps

## ■ PRODUCTS

BALLS	
SIZES	6" to 32"
WEIGHT	Up to 4000 kgs
TYPES	Balls with integrated trunnions and for high pressures applications (ANSI 2500)



RINGS, SLEEVES, FLANGES AND CONES	
OD	Up to 1300mm
ID	From 100mm
LENGTH	Up to 1300mm

NET SHAPE CENTRIFUGAL CASTINGS	
COMPONENTS	External shaped moulds, axialsymmetric components
DIMENSIONS (ODxIDxH)	900x100x600mm
WEIGHT	From 50 to 2000 kgs



### CENTRIFUGAL CASTINGS, ADVANTAGES:

- Extreme material cleanliness due to inclusions separation induced by centrifugation
- Very fine microstructure given by the rapid cooling inside metallic mould means high mechanical and corrosion resistance
  - Optimization of chemical analysis
- Total absence of gas and shrinkage cavities with subsequent density increase, which mean no UT and RT examination needed
  - Very simple and fast production cycle: short lead times
  - No limitations on minimum quantities (weight, length)
- Near net shape items are easily obtainable with the use of ceramic cores, simplifying the production process compared to static castings



### SUPPLY CONDITIONS

Our centricast items are supplied in the following conditions:

- **rough condition:** annealed, quenched and tempered, normalized, solution annealed or as requested by international standards or customers specifications;
  - **premachined;**
  - **finish machined.**