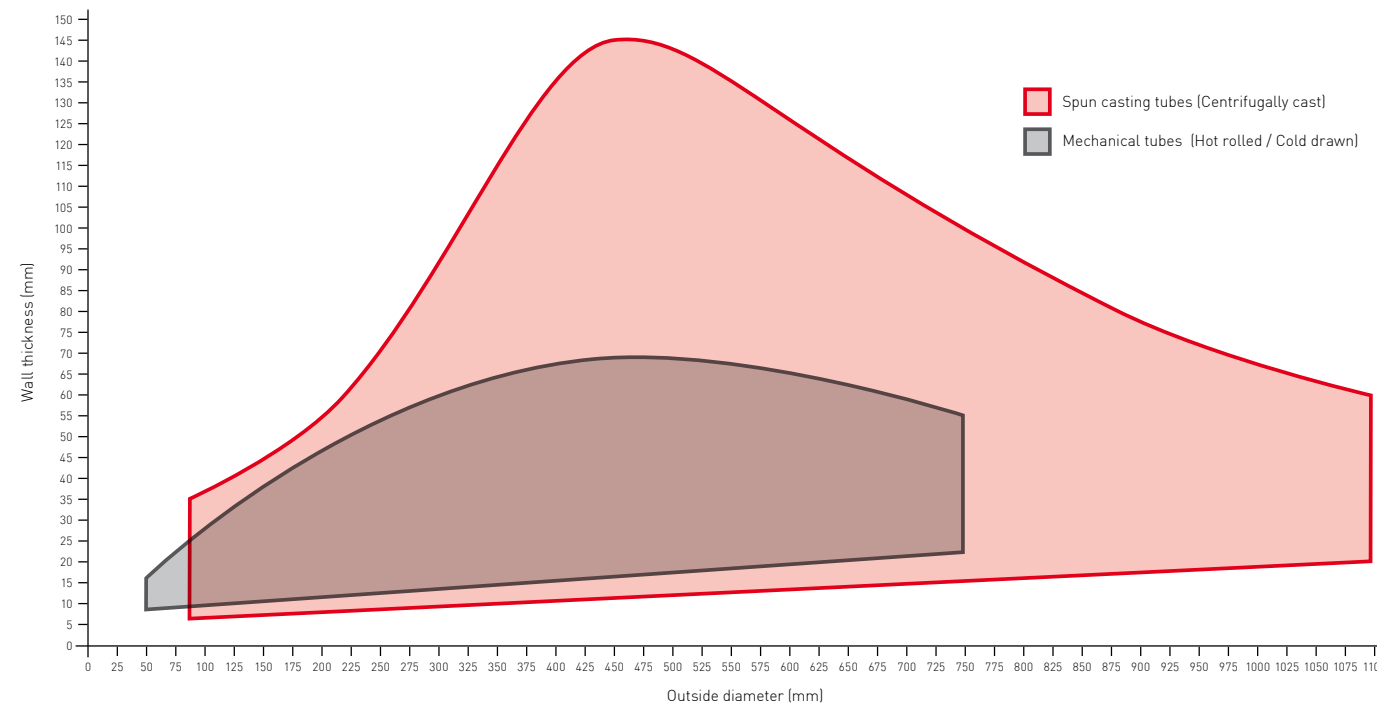


## ■ REFERENCE SECTORS

Centricast tubes find application in a wide variety of sectors.

We supply rough and fully machined tubes to customers operating in the following fields:

- oil & gas;
- chemical and petrolchemical;
- mining;
- separation, waste treatment;
- sea water desalination;
- flue gas desulphurization;
- fertilizer industry;
- lifting machinery;
- buildings, construction;
- process industry;
- naval;
- military industry;
- aeronautics;
- special application (non-magnetic components).



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**Mechanical centricast pipes**

## ■ 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.

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

## ■ MECHANICAL HOLLOW PIPES

Since many years Fondinox SpA is a leading producer of centricast pipes and shaped vertical items. Such products could be reasonably considered as the best solution in many applications, where highest dimensional and productive flexibility, very short delivery, best metallurgical quality and price are required.

Thanks to the continuous improvement of our production processes, enhancing the technological level and the technical content of our products and aiming to the optimization of our results in terms of quality performances, **Fondinox SpA** could be identified not only as a supplier but first of all as a reliable and highly qualified partner in the production of **stainless steel and special alloys centrifugal casting hollow pipes**.



## ■ TUBES DIMENSIONS

External Diameter	From 94 to 1200mm
Internal Diameter	Honed from 65mm, rough from 45mm
Thickness	Rough from 10 to 150mm
Length	Up to 4750mm in single piece, possibility to obtain higher lengths through weld joint

Compared to seamless or welded pipes, centricast pipes have a wider range of available diameters and thicknesses and no standardized sizes are available (see attached table).

Differently from hot rolled or cold drawn tubes, there is a total production flexibility, with no minimum quantities request.

Ready to ship pieces listed in our on-line stock on [www.fondinox.com](http://www.fondinox.com)

## ■ MATERIALS

The absence of thermo mechanical processing inside the casting process gives the opportunity to optimize the chemical analysis inside the standardized range, so optimal mechanical and corrosion resistance performances are obtained. Mechanical properties are almost isotropical since there is not rolling or preferential deformation direction.

We continuously offer our expertise and knowledge to our customer for materials choice and design. Fondinox has Norsok qualifications for the production of centrifugal pipes in alloys ASTM A995 GR 4A, GR 5A, GR 6A, A351 CK3MCuN, A494 CW-6MC, CX2MW, UNS S34565 for thicknesses up to 150mm.

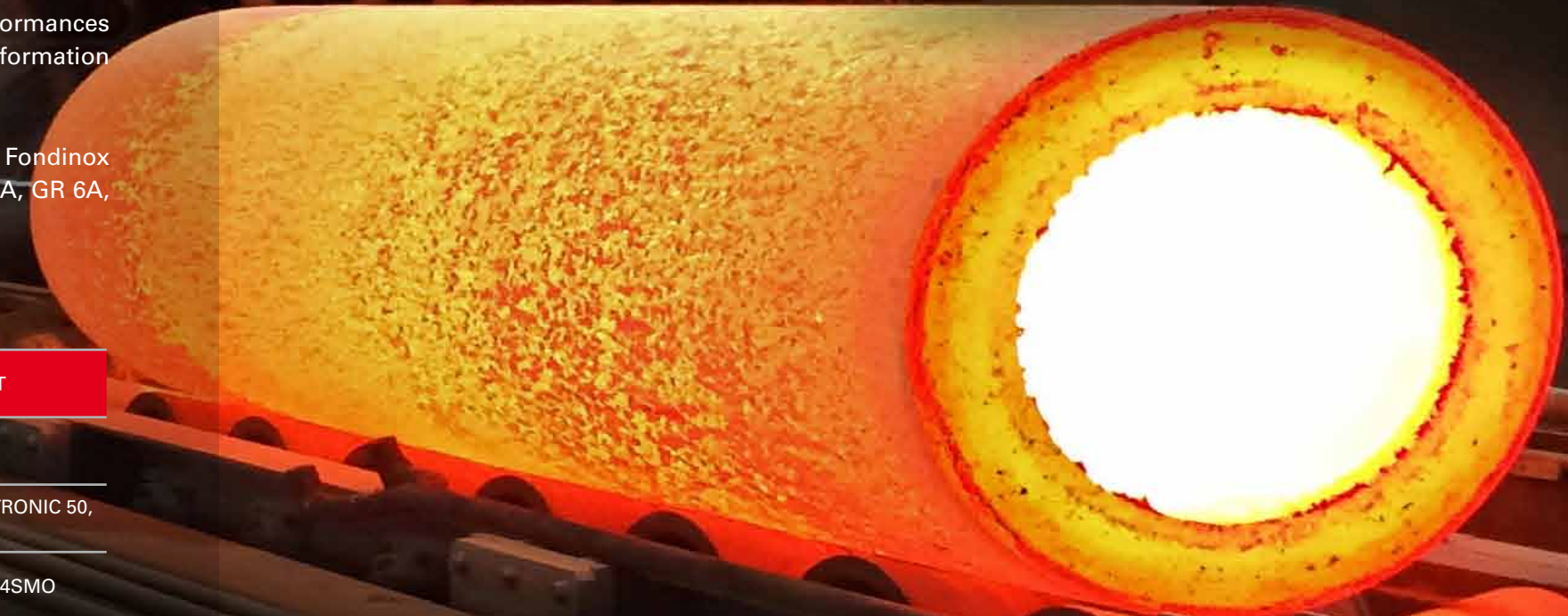
Table of materials normally used in these application, with their cross reference, is listed below.

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, CG8MMN, 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	

A complete list of our materials is available on our website [www.fondinox.com](http://www.fondinox.com)

### 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)



### 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 cylindrical;**
  - **finish machined with internal honing.**