

SOLUTIONS FOR THE **ORTHOPAEDICS**



BUILDING CRITICAL PARTNERSHIPS

For decades now we have been making our name as the go-to supplier of semi-finished products aimed at medical, tooling and industrial operators.

Beyond our offering of products that are unique in the marketplace, we strive to understand the needs and limitations of our partners who have developed their businesses in demanding fields that are in constant evolution. We are forming strategic partnerships which are essential for the development of the materials used in the latest technologies.

This relationship of trust is essential as it limits each player's risk and provides bespoke solutions for the delivery of ambitious projects. Each day, our teams are working to solve critical issues with professionalism, agility and energy.

Our slogan «Building Critical Partnerships*» perfectly sums up the value that we can bring to our clients. We are much more than simply a supplier.



A handwritten signature in black ink that reads "François ORY". The signature is written in a cursive style and is positioned above a horizontal line.

François ORY
CEO

OUR VOCATION

We manufacture cannulated and multiple hole bars from steel and titanium alloys. We also supply solid bars made from special steel materials.

In the medical field, Forécreu's mission is to supply cannulated bar solutions for use in the production of implants and surgical instruments. We also specialize in injection-molding of bio-resorbable orthopedic implants using PEEK and PMMA.

Approved by all main OEMs (Original Equipment Manufacturers) and CMs (Contract Manufacturers) in the industry, FORÉCREU has over the years become a household name in the orthopedic, trauma and sports medicine fields.

+71

YEARS OF
EXPERTISE AND
KNOW-HOW

2

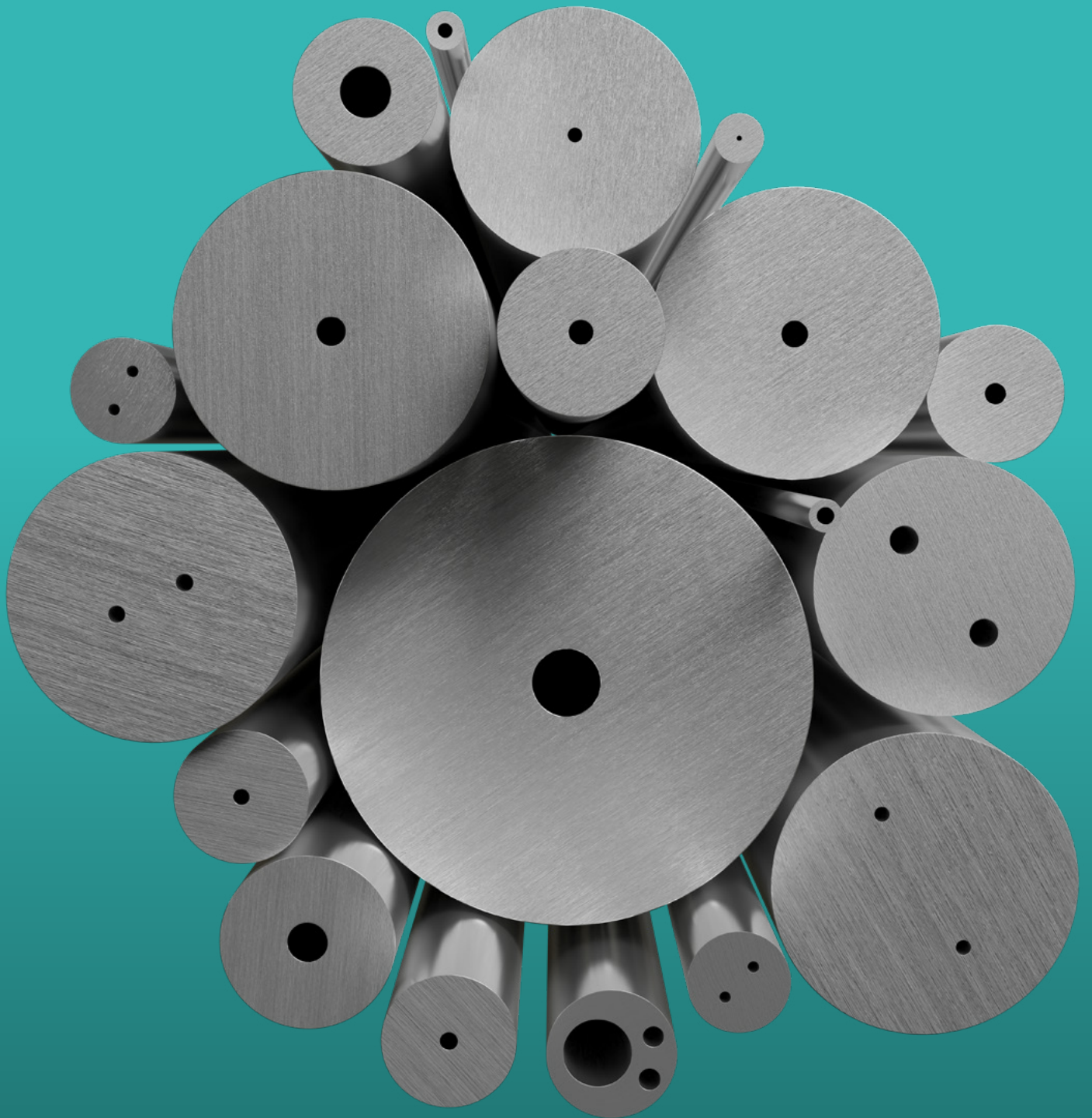
MANUFACTURING
HUBS
BASED IN FRANCE

4

SUBSIDIARIES :
USA, CHINA,
GERMANY & JAPAN

+400

MORE THAN
400 CUSTOMERS HAVE
PLACED THEIR
TRUST IN US.



OUR MARKETS

We respond to our customers' needs with innovative solutions aimed at the future.

MEDICAL

- Cannulated bar solutions in stainless steel or titanium alloys for implants or surgical instruments.
- Pre-hardened solid bars solutions in stainless steel (AISI 420B) for the production of surgical or dental instruments.
- Stainless steel tube solutions (AISI 304L & 316L) for the production of surgical instruments.
- Bio-resorbable and non-resorbable orthopedic implant solutions (PEEK/PMMA) for use in trauma and sport medicine.

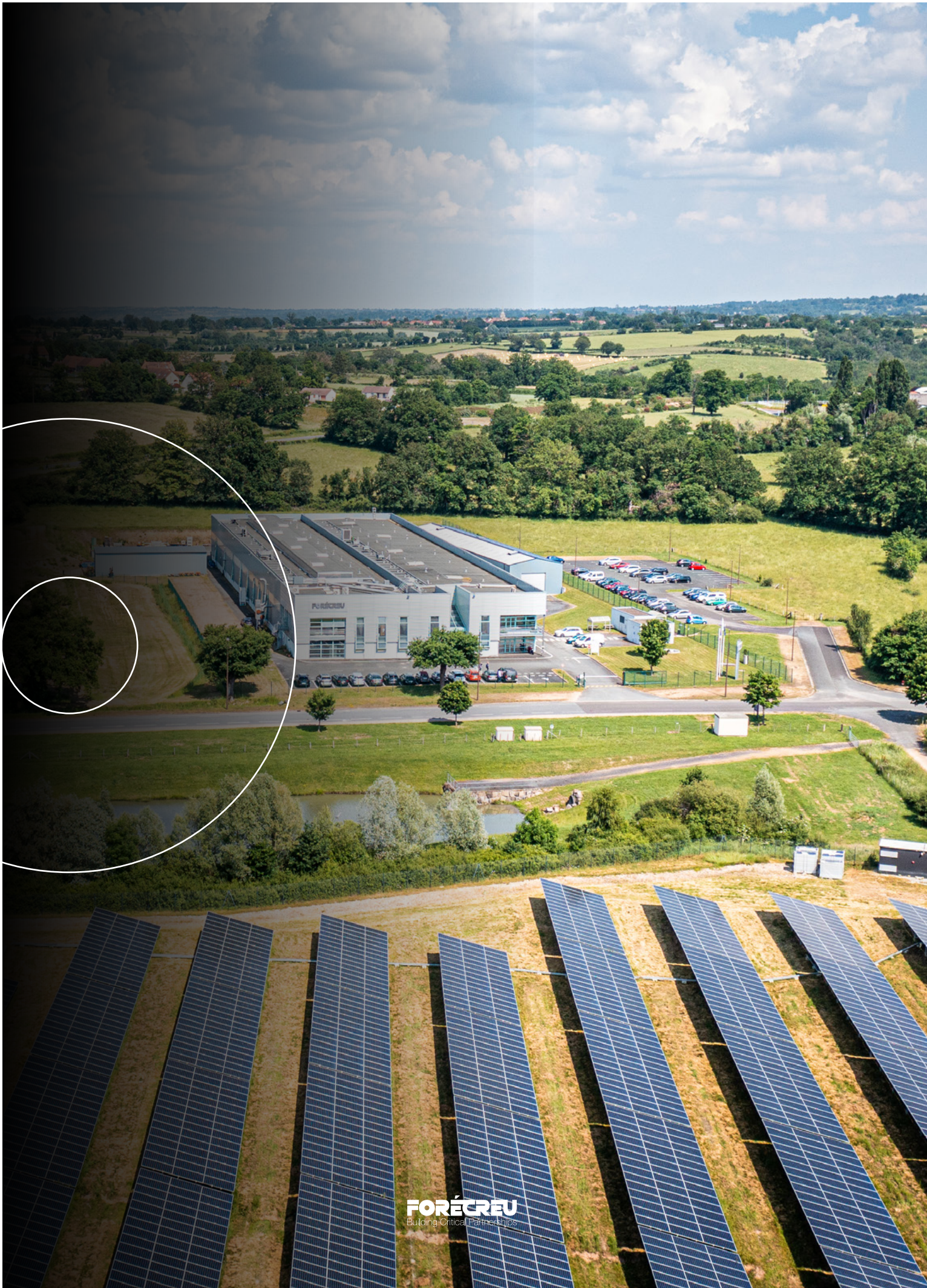
TOOLING

- Oil hole bar solutions made of high-speed steel (HSS) or tool steels for the production of coolant fed drills, taps and tool bodies.

INDUSTRY

- Hollow bar and multi-hole solutions in stainless steel, structural steels, special steels and specialty alloys for applications use in the agri-food, energy sectors, etc.
- Solid bar solutions made of specialty steel and alloys for use in the nuclear, energy sectors, etc.





OUR STRENGTHS

- We created a unique industrial process over **70 years ago**.
- **We are the world leader** in the cannulated and multiple hole bar marketplace.
- **Long-term relationships** built with our customers and quality suppliers.
- **Compliance with customer technical specifications**.
- **Technical and sales support** to assist you throughout the life of your project.
- Fast delivery thanks to high availability of **standard stock items, worldwide**, with online updated inventories.
- **Our subsidiaries in the USA, China and Germany** provide you with service which is near to you wherever you are in the world.
- **Quality control testing** carried out in our laboratory: tensile strength and metallurgy testing.
- **Technical expertise** provided by our metallurgy experts.
- **Two dedicated production and product development sites:** design, testing, extrusion, rolling, drawing, thermal treatment, twisting, grinding, etc.
- Our organization and products are certified **ISO9001, ISO14001 & ISO13485**.

At FORÉCREU, you will find a range of bar products which meet market requirements and a team of specialists who will assist you in the successful delivery of your projects.





CANNULATED BAR SOLUTIONS FOR MEDICAL DEVICES

With our experience in the medical field, we understand the issues faced by our customers and their requirements in an industry in constant evolution.

Advantages of Forécreu cannulated bar solutions

- **Proven technology** based on an industrial process which is unique in the world.
- **Optimized production costs:** our cannulated bar products are delivered ready for machining. By eliminating the drilling stage, you will optimize your per-item production costs. You can therefore focus directly on your core business objectives and gain in efficiency and time to market
- **Rationalized timescales and throughput:** you will better be able to control risks and increase your organization's performance by simplifying your industrial process. You will gain in agility.

We are proud to serve the surgical field by simplifying the lives of medical device manufacturers and guaranteeing patient safety.

Forécreu cannulated bar solutions

- For the manufacture of **instruments and tools** : drills, end mills, reamers, drill guides, screwdrivers, etc.
- For the manufacture of implants : screws and nails.



CANNULATED BARS FOR MEDICAL INSTRUMENTS

Long cannulated bar solutions for your medical instrument projects:

- outside diameter of 4–35 mm and hole diameter of 0.8–10 mm in stainless steel
- outside diameter of 4–18 mm and hole diameter of 0.8–6.75 mm in titanium alloy.

- Long cannulated bars : up to 3.2 meters.
- Thick walls.
- Black or ground finished bars, depending on your requirements.

Technical specifications of our product range

Stainless steels

- 3.5mm < OD < 35mm*
- 0.8mm < ID < 10mm

Titanium alloys

- 4mm < OD < 18mm
- 0.8mm < ID < 6.75mm

		Characteristic	Stainless Steels	Titanium Alloys	
OD	Black finished	Outside diameter	4 < Ø < 14mm	+0.30/-0.10 mm	+0.30 /-0.10 mm
			14 < Ø < 18mm	+0.50/-0.15 mm	+0.50 /-0.15 mm
			18 < Ø < 35mm	+0.60/-0.20 mm	-
	Ground finished	Outside diameter (OD)	ISO h9 ou h8		
		Roughness	Ra 1.6µm		
ID		Inside diameter	ID ≤ 1mm : +/-0.05mm ID > 1mm : +/-5% ID		
e		Eccentricity	≤ 1% OD		
		Ground bars (Straightness)	< 1mm/m		

Available grades

- Martensitic stainless steel: 420B / 431 / 440A / 420MOD
- PH martensitic stainless steel: 630 / 455 / S465
- Austenitic stainless steel: 304L / 316L
- Titanium Alloys: Ti6Al4V eli

CANNULATED BARS FOR MEDICAL IMPLANTS

Long cannulated bar solutions for your medical implant projects:

- outside diameter of 4–35 mm and hole diameter of 0.8–10 mm in stainless steel
- outside diameter of 4–18 mm and hole diameter of 0.8–6.75 mm in titanium alloy.

- Long cannulated bars : up to 3.2 meters.
- Thick walls.
- Ground finished bars.

Technical specifications of our product range

Implantable austenitic

- 3mm < OD < 21mm
- 0.8mm < ID < 10mm

Titanium alloys

- 4mm < OD < 18mm
- 0.8mm < ID < 6.75mm

Characteristic		Stainless Steels	Titanium Alloys
OD	Black finished	4* < Ø < 14mm	+0.30/-0.10mm
		14 < Ø < 18mm	+0.50/-0.15mm
		18* < Ø < 21* mm	+0.60/-0.20mm
Ground finished	Outside diameter (OD)	ISO h9	
	Roughness	Ra 1.6µm	
ID	Inside diameter	ID ≤ 1mm : +/-0.05mm ID > 1mm : +/- 5% ID	
e	Eccentricity	≤ 1.6%OD	
Ground bars (Straightness)		< 1 mm/m	

Available grades

- Austenitic stainless steels : 316L implant / 1.4472
- Titanium Alloys : Ti6Al4V el / Ti 6Al 7Nb

Contact us and we will help you analyze the feasibility of your project: contact@forecreu.com

SOLID BARS FOR MEDICAL INSTRUMENTS

Solid pre-treated bar solutions in stainless steel with a diameter 2–12 mm, for the production of your medical tools and instruments.

Pre-treated bars save time thanks to a shortened manufacturing process which maintains the tool's hardness/corrosion ratio and uniform straightness throughout.

- Solid bars with a length of 2 meters.
- Straightness: 1mm per 1000mm.
- Average hardness of 54 HRc.

Black outside Ø	Rectification ISO	Length	Hardness HV20	Straightness
2.0 mm	h8	2000mm	550 - 590	1 mm / 1000 mm
2.5 mm				
3.0 mm				
3.5 mm				
4.5 mm				
5.0 mm				
6.0 mm				
8.0 mm				
10.0 mm				
12.0 mm				

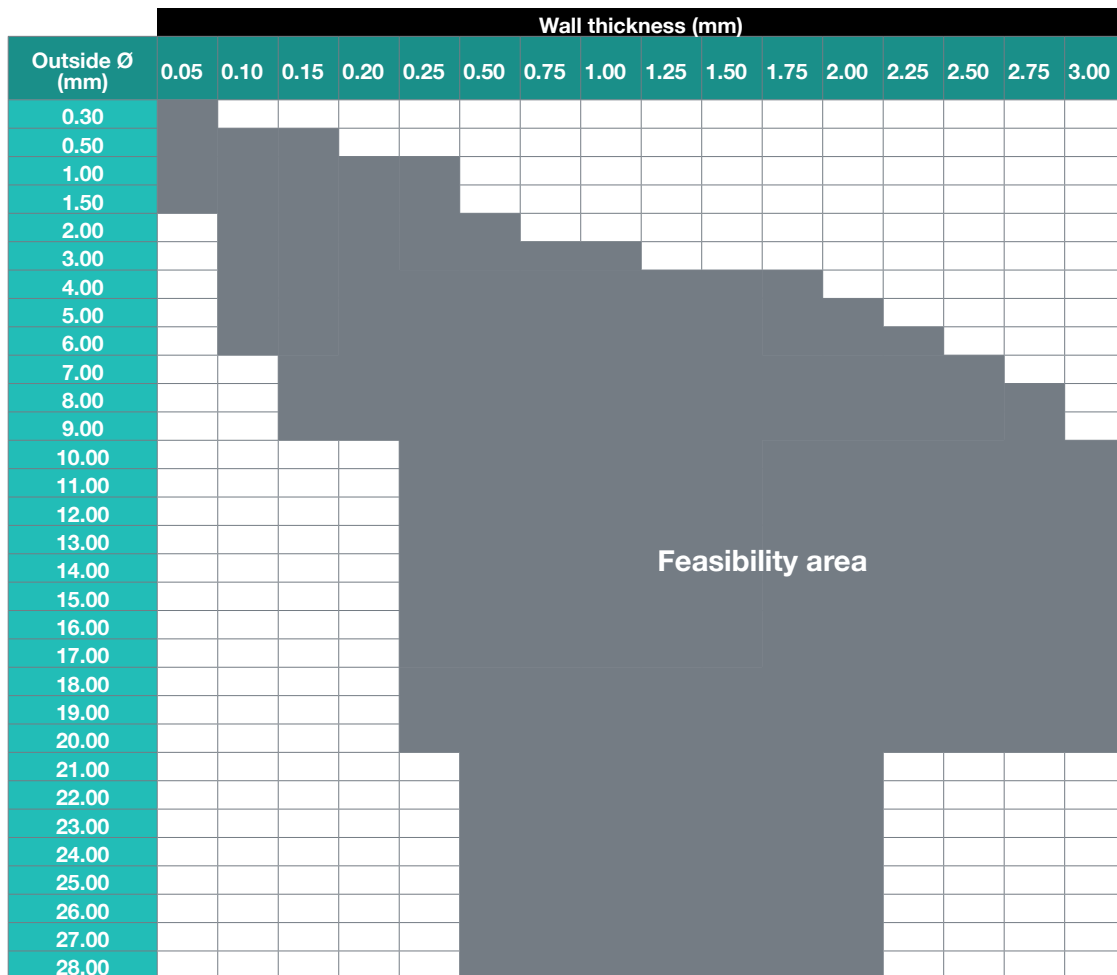
Available grades

- Martensitic stainless steel: 420B

TUBES FOR MEDICAL INSTRUMENTS

Tube solutions (thin walls) with a diameter of 0.3–28 mm and wall thickness of 0.05–3 mm.

- Surface finish : Ra ≤ 0.40µm
- Thickness tolerance : +/- 5%
- Tube length: ∅ < 2mm = 3000 mm max.
 ∅ > ou = 2mm = 6000 mm max.



Available grades

- Austenitic stainless steels : 304L / 316L

GRADE SELECTION GUIDE

	Type of grades	Reference	Canulated bars range	Solid bars range	Tubing range	Werkstoff	ASTM	ISO	EN 10027	Hardness	Corrosion performance
Stainless Steels	Martensitic	420B	■	■	-	1.4028	F899	7153-1-C	X30Cr13	■■■■■	■
		431	■	-	-	1.4057	F899	-	X17CrNi16-2	■■■■	■■■
		440A	■	-	-	1.4109	F899	-	X65CrMo17	■■■■■	■
		4112 (near 440B)	■	-	-	1.4112		7153-1-R	X90CrMoV18	■■■■■■■	■
		420MOD	■	-	-	1.4123	F899	-	X40CrMoVN16-2	■■■■■■■	■■■■
	PH Martensitic	630	■	-	-	1.4542	F899/A564	10088-3	X5CrNiCuNb16-4-4	■■■■	■■■■
		S465	■	-	-	1.4614	F899/A564	-	X2CrNiTi12-11-2	■■■■■	■■■■■
		455	■	-	-	1.4543	F899/A564	-	X3CrNiCuTi12-9-2	■■■■	■■■■
	Austénitic	304L	■	-	■	1.4307	F899 chemical composition	7153-1-M	X3CrNi18-10	■	■■■■■
		316L	■	-	■	1.4404	F899 chemical composition	7153-1-P	X3CrNiMo17-11-2	■	■■■■■
		316L implant	■	-	-	1.4441	F138	5832-1	X3CrNiMo17-11-2	■	■■■■■
		Rex 734	■	-	-	1.4472	F1586	5832-9	X4CrNiMnMo21-9-4	■■■	■■■■■
	Titanium alloys	Titanium	Ti 6Al 4V eli	■	-	-	3.7165	F136	5832-3	-	■■■
Ti 6Al 7Nb			■	-	-	3.9367	F1295	5832-11	-	■■■	■■■■■

Delivery conditions	Medical tools and instruments	Medical implants	Market segments / products
Annealed (cannulated bars) Pre-hardened (solid bars)	Yes	No	Instruments for extremities, sport medicine, trauma, spine and dental. E.g. : drill, end mills, tap, screwdriver, drill cutting guide, reamer, etc.
Annealed	Yes	No	
Annealed	Yes	No	
Annealed	Yes	No	
Annealed	Yes	No	
Solution annealed	Yes	No	Instruments for extremities, sport medicine, trauma, spine and dental. E.g. : drill, end mills, tap, screwdriver, drill cutting guide, reamer, etc.
Solution annealed	Yes	No	
Solution annealed	Yes	No	
Softened or cold worked	Yes	No	Instruments for sport medicine and spine. E.g. : Screwdriver and instruments for spine.
Softened or cold worked	Yes	No	
Annealed, cold worked or highly cold worked	No	Yes	Implants for trauma. E.g. : Compression and osteosynthesis screws, intramedullary nail.
Softened or cold worked	No	Yes	
Annealed	Yes	Yes	Implants and instruments for trauma, spine and neurology. E.g. : Compression screw, pedicle screw, guiding screw, intramedullary nail and sonotrode.
Annealed	No	Yes	Implants for trauma and spine. E.g. : Compression screw, pedicle screw for spine.



OUR STANDARD GROUND FINISHED ITEMS

FORÉCREU offers a wide range of available items. Our current stock levels can be viewed at www.forecreu.com.

- Bar length: 2-3.2 meters.
- Cannulated bars - available grades: 420B / 420MOD / 455 / 630 / 316L implant / TA6VELI.

Nuance	OD Rectifié (mm) selon norme ISO h8	ID (mm)
420B	5.00	0.90
	6.00	1.20
	6.00	1.80
	7.00	2.20
	8.00	1.20
	8.00	1.40
	9.00	2.20
	9.00	2.70
	9.50	1.80
	14.50	2.70
420MOD	6.50	1.20
455	5.00	0.95
	4.95	1.24
	13.00	1.70
	13.50	3.40
630	4.80	1.60
	8.00	1.60
	8.00	1.80
	8.50	1.20
	13.00	3.40
316IM	10.00	2.20
	13.00	2.70
TA6V ELI	5.00	1.10
	6.00	1.20
	6.00	1.60
	8.00	1.70
	10.00	1.70
	13.00	2.70
	13.00	3.50



POLYMER SOLUTIONS FOR ORTHOPEDIC AND SPORT MEDICINE

The FORÉCREU Polymer Division specializes in the manufacture of polymer implants using injection-molding. From the selection of implantable polymers through to the manufacture of your implants via mold design, FORÉCREU will help you with the production of ligament screws, anchors, cages and centering tools for hip prostheses.

Resorbable materials

The term «bio-resorbable polymers» covers several groups of polymers, including polyactides and polyglycolides which are the most commonly used in surgery. Under normal physiological conditions, these polymers hydrolyze into non-toxic biodegradable products (lactic acid and/or glycolic acid) which are easily metabolized and removed by the human body in the form of CO₂ and H₂O.

Physiological compatibility - All of these polymers are easily tolerated and are non-toxic. Numerous tests and clinical trials have shown this using polyesters made from lactic acid and glycolic acid.

BTCP compound - Beta tricalcium phosphate (βTCP) compounds are osteo-conductor materials which encourage the formation of bone tissue when they come into contact with the bone.

Natural PEEK/carbon-fiber-reinforced (CFR) PEEK

PEEK is an **aromatic semi-crystalline polymer which is bio-compatible and designed for permanent implantation**. It can be reinforced with carbon fiber to improve its mechanical strength. Its main advantages are:

- Excellent mechanical performance.
- Highly resistant to wear.
- Can be repeatedly sterilized using all current techniques without affecting performance.
- Full or partial radio-transparency.
- Bio-compatible.
- Elastic module similar to that of bone.

PMMA

Poly(methyl methacrylate) is mainly used to manufacture centering tools or spacers for cemented hip prostheses.

OUR LOCATIONS

A geographical coverage in 5 countries to serve our customers all over the world.





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Discover our solutions at
www.forecreu.com

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