Your 360° competence partner for medical technology

engineering.tomorrow.together.

thyssenkrupp

Consulting. Material. Service. 360°.

Dear readers, dear customers

I would like to welcome you to the world of materials for medical technology.

Hardly any other segment inspires us at thyssenkrupp Materials Schweiz as much as medical technology. As hardly any other industry places such high demands on material conformity and processing. For years, we have been working with great passion and pleasure to develop innovative and sustainable solutions made of metallic materials that meet the high demands of medical technology together with our customers, metallurgists and manufacturing plants.

The European Medical Device Regulation (MDR) and the Supply Chain Act have not only increased the requirements for raw materials, but also the associated traceability along the entire supply chain to the manufacturing plants. Failure to comply with this regulation can have fatal consequences and lead to complete recalls as well as loss of market share and image. As you can see, supply chain management today is more than just providing the right material at the right time and place. It's about taking joint responsibility for people and the environment, and this goes beyond our "own garden". Smart solutions for a sustainable future are in demand.

We at thyssenkrupp Materials Schweiz AG support you with our 360° service strategy "Materials as a Service" not only in the procurement of the right raw material, but also take over your warehouse management on request and thus ensure complete traceability across your entire supply chain. In addition to our expertise and know-how we have developed digital tools for you:

"What we need are smart solutions for a sustainable future"

On the one hand, these support you in the traceability of your supply chain. On the other hand, you have full transparency at all times by tracking the emissions caused.

The ISO 13485:2016 certification - in addition to the existing ISO 9001:2015 and EN 9120:2018 certifications - gives you and us the certainty that our internal processes are precisely tailored to the requirements of medical technology. On the following pages you will find an overview of our services for medical technology in terms of materials and supplementary services. However, this overview should not be seen as exhaustive, but rather as a beginning or possible starting point for cooperation. Take advantage of our opportunities and our network. Whether you are looking for additional special materials or need support in your supply chain. Whether regional or global. Our experts will be happy to advise and support you.

True to our motto: engineering. tomorrow. together.

Best regards

Jürgen Fredel
Sales Manager Medical Technology

Metallic materials for medical technology

Our assortment at a glance

Brand / Material	EN-no.	AISI	ISO	ASTM	US	Wire	Rod	Profile	Sheet metal / plates	CUBEINOX-forged block
REMANIT-4021	1.4021	420A	7153-1	F899	S42000	●	●	●	●	●
REMANIT-4028	1.4028	420B	7153-1	F899	S42000	●	●	●		●
REMANIT-4034	1.4034	420C	7153-1	F899	S42000	●	●	●	●	●
REMANIT-4057	1.4057	431	7153-1	F899	S43100	●	●			●
REMANIT-4108 (Cronidur® 30)	1.4108		7153-1	F899	S42027	●	●			
REMANIT-4112	1.4112	440B	7153-1		S42000	●	●	●		●
REMANIT-4122	1.4122		7153-1							●
REMANIT-4123 (ESU)	1.4123	420Mod	7153-1	F899	S42000	●	●		●	●
REMANIT-4197	1.4197	420F	7153-1	F899	S42020	●	●			●
REMANIT-4301 / 4307	1.4301	304	7153-1	F899	S30400	●	●	●		●
REMANIT-4305	1.4305	303	7153-1	F899	S30300		●	●		●
REMANIT-4306	1.4306	304L	7153-1		S30400	●	●	●		●
REMANIT-4310	1.4310	302/301	7153-1	F899	S30200 / S30100	●	●	●		
REMANIT-4313	1.4313	415			S41500		●			●
REMANIT-4401	1.4401	316	7153-1	F899	S31600	●	●	●		●
REMANIT-4404	1.4404	316L		F899	S31603	●	●	●		●
REMANIT-4435	1.4435	316L		F899	S31603	●	●	●		●
REMANIT-4472 /REX-734	1.4472		5832-9	F1586	S31675		●			
REMANIT-4542/4548/17-4PH®	1.4542	630	7153-1	F899	S17400		●	●		●
Nitronic® 60	Nitronic® 60			A276/A240	S21800	●	●		●	
REMANIT-440A	~1.4109	440A		F899	S44002	●	●			
REMANIT-4441 (soft)	1.4441 ESU	316LVM	5832-1	F138/F139	S31673	●	●	●	●	
REMANIT-4441 (hard)	1.4441 ESU	316LVM	5832-1	F138	S31673	●	●	●		
REMANIT-4441 (strain hardened)	1.4441 ESU	316LVM	5832-1	F138	S31673	●	●	●		
REMANIT-4441 (extra hard)	1.4441 ESU	316LVM	5832-1	F138	S31673	●	●	●		
REMANIT-4543 / Custom 455	1.4543	XM-16	7153-1	F899	S45500	●	●			
REMANIT-4614 / Custom 465	1.4614			F899	S46500	●	●			
Cobalt-chromium-molybdenum	CoCr28Mo		5832-12	F1537 Alloy1	R31537		●			
Titanium Grade 1	3.7025		5832-2	F67	R50250	●	●		●	
Titanium Grade 2	3.7035		5832-2	F67	R50400	●	●	●	●	
Titanium Grade 4A	3.7065		5832-2	F67	R50700	●	●	●	●	
Titanium Grade 4B	3.7065		5832-2	F67	R50700	●	●	●	●	
Titanium 6Al4V ELI	3.7165		5832-3	F136 ELI	R56401	●	●	●	●	
Titanium 6Al7Nb	9.9367		5832-11	F1295	R56760	●	●			
THYRAL-5083	EN AW-5083						●		●	
THYRAL-6026LF (Lead Free)	EN AW-6026						●			
THYRAL-6082	EN AW-6082						●	●	●	
THYRAL-7020	EN AW-7020								●	
THYRAL-7022	EN AW-7022								●	
THYRAL-7075	EN AW-7075						●		●	

Other materials on request. We will be happy to advise you on the technology.

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CUBEINOX – cubic. corrosion-resistant. easy to machine.

Stricter standards and increasing demands on the corrosion resistance of mechanical parts and components increasingly require the use of corrosion-resistant steel materials. It is also available in cubic form.

In contrast to the readily available round dimensions, stainless steel in cubic form was previously only available in profile material or as hot-rolled sheets. However, this raw material is generally difficult to very difficult to machine and therefore requires high tool wear and also has a considerable risk of distortion. This leads to processing difficulties that allow little process reliability and hinder reproducible production, which is extremely important today.

CUBEINOX forged blocks offer an interesting alternative to avoid these difficulties. Practical machining tests and the experience of our customers clearly show that **CUBE**INOX materials are characterized by very good machinability and at the same time low distortion, thus providing optimum support for the reproducible manufacturing process required on all sides.

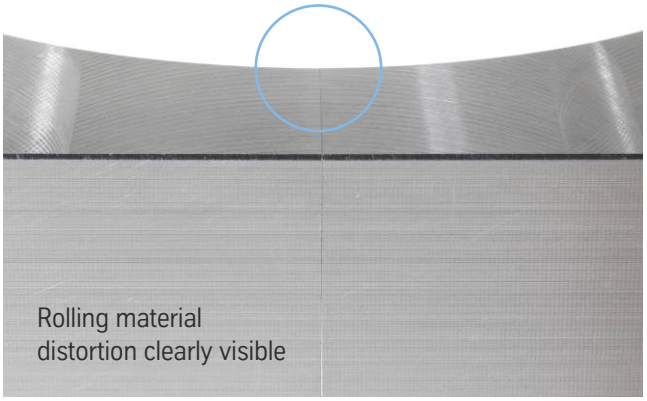
CUBEINOX-forged blocks - masterfully low distortion

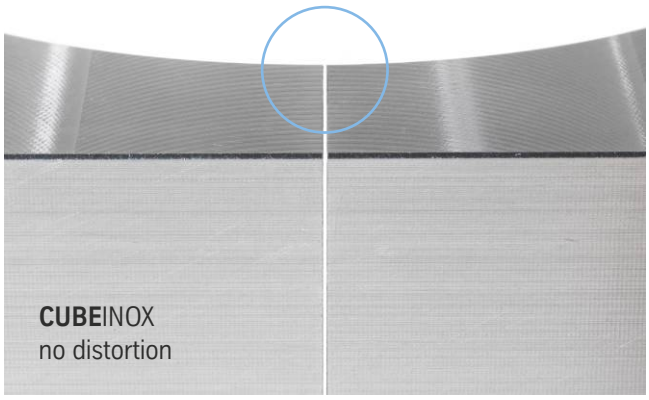
Blanks sawn on all sides from rust-resistant **CUBE**INOX forged blocks exhibit high dimensional stability even after considerable milling. Extreme machining tests in practice have shown that the material distortion of **CUBE**INOX is 8-10 times less than that of rolled material.

No edge hardening, precise and angular cuts, tight tolerances and therefore low material usage, less tool wear and better machinability thanks to our special SUPER-IM quality are further advantages of **CUBE**INOX.

CUBEINOX forged blocks are available in a wide range of austenitic, martensitic and ferritic grades.

CUBEINOX-forged block or rolling material
> sawn - milled - wire-eroded





The advantages of sawn block blanks

- no edge hardening, as sawn and not plasma-cut
- low stresses in the material, as forged
- precise angled cuts
- tight tolerances
- low material usage
- less tool wear and time savings in your production
- available in special SUPER-IM quality > for optimum machinability with acceptance test certificate in accordance with EN 10204 / 3.1

in SUPER-IM quality
for best machinability

Additive manufacturing / powder metals

Even though plastics are currently predominantly used for visualization models in medical technology, biocompatible metals are recording double-digit growth rates.

The rapid development of additive manufacturing processes is leading to increasingly diversified requirements for machines, powders, handling on the printing machine and the resulting mechanical-technological properties of the printed components.

Our modern metal powders are tailored to the different machine types and the underlying process. This means: We provide you with the powder that is optimally matched to your printing process.

Standard materials

Designation	DIN/EN	Brand	Type	Category	Strength range R_m (Mpa) $R_{p0,2}$ (Mpa)	Vickers hardness (HV 10) approx. values
		THYROPRINT-MED	austenitic	stainless, "implant"	1120 915	350
316L	1.4404	THYROPRINT-4404	austenitic	stainless	590 – 660 490 – 540	205
17-4PH®	1.4542	THYROPRINT-4542	Maraging steel	stainless, hardenable	750 – 910 550 – 590	220
AlSi10Mg	3.2382	THYROPRINT-AlSi10	Aluminum alloy	lightweight material	220 – 420 180 – 220	115
Ti6Al4V	3.7164	THYROPRINT-Ti64	Titanium alloy	high-strength lightweight construction	830 – 1.100 910 – 1.200	up to 385

Strength and hardness properties depend heavily on the heat treatment condition of the printed component.

Note:

Please note that due to the directional dependence of the properties in additive manufacturing, the strength values listed here may be significantly lower in some cases. The properties must always be checked on the original component!

greenability - smart solutions for a sustainable future

MEDIBARRE ECO-90®

Made from at least 90% recycled titanium. Great importance is attached to short transportation routes and the conservation of resources. Ti 6Al4V MEDIBARRE ECO-90® is certified for medical implants according to the ISO 5832 standard to ensure optimum dermatological compatibility. The round bars are supplied in low-stress quality and meet the highest demands.
Origin of goods: Ti 6Al4V MEDIBARRE ECO-90® is manufactured by a European plant using recycled materials collected in Europe and Switzerland.

DERMALLOY®

Nickel-free, non-magnetic, highly corrosion-resistant steel "made in Germany". Free from delta ferrite. The corrosion resistance is better than 1.4441/316LVM (Pitting Resistance Equivalent Number PREN >36). By dispensing with the element nickel (<0.05%), the austenitic steel DERMALLOY® can be used for watch components, jewelry, tools, etc. in cases of nickel allergies.

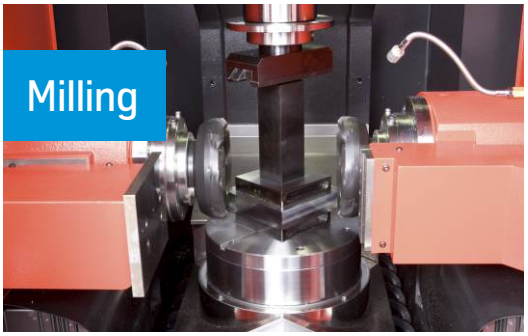
Product Carbon Footprint-Report (PCF calculator)

Our DNV-validated Product Carbon Footprint (PCF) calculator enables you to calculate the CO_2 footprint of your products in detail and precisely. By taking into account all relevant sources of emissions along the entire value chain, you gain a comprehensive understanding of the climate impact of your products. Download the PCF sample report now!

Customized processing services

A central component of our range of services is the customized sawing of components. Whether series cuts from aluminum, steel or miter-cut tubes, we have the corresponding options:

- 24 conventional circular and band saws
- 2 Schelling sawing machines for aluminum panels
- 1 fully programmable KASTO sawing center
- 1 Kaltenbach miter saw



Rough machining is costly and wear-intensive. We produce the coarse chips for you so that you can protect your high-precision machines for precise work.

- Roughing of all materials
- Finishing
- Milling special corners and edges faceting

Four powerful deep hole drilling machines are available at thyssenkrupp Materials Schweiz to perfectly round off the comprehensive services from a single source.

- CAM software interfaces: Parasolid, STEP, IGES, VDAFS, others on request
- Round parts with prism clamping are also possible

A modern 5-axis machining center is available for your further requirements and, in addition to versatile machining steps, also offers the option of pre-machining shaped parts close to the contour.

- Zero-point system bores for clamping pins
- Pre-milling of contours
- Transport threads
- Bevel and corner processing

Pre-ground or finish-ground to a few hundredths of a millimeter.

- Maximum sanding size of 3,000 x 1,400 mm maximum
- Sanding thickness of 630 mm (= thickness of the panel)

Your expert partner for the entire supply chain. We call it "Materials as a Service".

With our 360° service strategy "Materials as a Service", we aim to provide you with the best possible support across the entire supply chain and in all materials issues. This also includes an excellent network of external service providers, which enables us to offer you a comprehensive range of supplementary services from a single source:

- Engineering/design consulting
- Heat treatment consulting
- Ultrasonic, hardness and crack testing
- Spectral analyses (material analyses)
- Metallographic analyses
- Additional US tests in accordance with current standards
- Carrying out notched bar impact and tensile tests
- Ferrite measurements on rust and acid-resistant materials
- Material certification according to acceptance test certificate EN 10204/3.2
- Material restamping according to Swiss TS or other testing companies

Improve the transparency of your supply chains with t-kontrol®!

The complete traceability of materials and processes is essential in medical technology and other areas.

The new t-kontrol® app provides a real-time overview of your orders and allows independent access to material certificates and other order documents.

Launched in April 2024, t-kontrol® is now being continuously developed and equipped with new functions.

Materials Services Schweiz

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