REDEFINING FOOD PROCESSING

High performance metals and technology for the food industry

voestalpine High Performance Metals International GmbH
www.voestalpine.com/hpm/food

voestalpine
ONE STEP AHEAD.



PURE PERFORMANCE BEYOND EXPECTATIONS

At our core, we are a company driven by performance.

We strive for excellence in everything we do, and this commitment extends to our partnerships with food manufacturers.

With our cutting-edge technologies, we revolutionize every step of food processing, ensuring maximum productivity, uncompromising quality, and the highest standards of food safety. Our goal is to create better products and contribute to a more sustainable future.

Fueled by a passion for innovation, we think beyond boundaries and redefine what is possible. This is how we change the world and shape the future.

REDEFINING FOOD PROCESSING.

WELCOME TO THE voestalpine GROUP

Worldwide, we at voestalpine work on innovative solutions made of steel and other metallic materials, day in and day out. Our focus is on innovation, technology, and quality.

WHO WE ARE AND WHAT WE DO

The voestalpine Group, headquartered in Linz, Austria, is a globally leading steel and technology group with a unique combination of materials and processing expertise. Our company is divided into four divisions, each with a product and service portfolio that makes them a leading provider in Europe or worldwide.

With its top-quality products and system solutions made from steel and other metal alloys, the voestalpine Group is a leading partner of the automotive and consumer goods industries as well as of the global aerospace and oil & gas industries; we are also the world market leader in rail technology systems, tool steel and special sections.

As an environmentally friendly international group, and an important ecological pioneer, we are committed to the global climate goals. We are working intensively to develop technologies for decarbonization, and to reduce CO2 emissions over the long term in order to achieve our goal of net zero emissions by 2050.

Steel from voestalpine can be found in many impressive places, like the latest generation of Airbus aircraft, the Atomium in Brussels, at Wembley stadium in London, or in the world's tallest building – the Burj Khalifa in Dubai.

Here you can find out more about voestalpine and its top quality products and system solutions
www.voestalpine.com

HIGH PERFORMANCE METALS DIVISION

Meeting and exceeding customer expectations.

As the global market leader in tool steel and one of the leading suppliers of high-performance materials, voestalpine High Performance Metals produces technologically advanced products at seven production sites in Europe, North America and South America. And with around 130 locations in approximately 40 countries on every continent, we provide our customers with outstanding service wherever they may be located. We offer our customers production, sales, and service from a single source, helping to make them more competitive.

To find out more about
the High Performance Metals Division
please visit us at
www.voestalpine.com/hpm

HOLISTIC SOLUTIONS

We focus on technologically highly specialized product segments and we are the global market leader in production and distribution of tool steel and other special steels. We support our customers with tailored solutions along the entire value chain—starting with design and engineering, through the selection of the right materials and post-treatment processes, such as sawing, machining, heat treatment, coating, surface treatment and texturing, to additive manufacturing and downstream processes.

Many of our customers operate in the most technologically demanding industries and rely on our leading brands BÖHLER, UDDEHOLM and Villares Metals for special steels, tool steels, powder metallurgical steels, and additive manufacturing powders.

Regardless of our brand or location, our sales team works closely with engineers, toolmakers and machine manufacturers to offer our customers complete solutions. Customer intimacy and effective logistics are an integral part of our commitment to fostering long-term partnerships with our customers.

READY-TO-USE ENGINEERED PRODUCTS

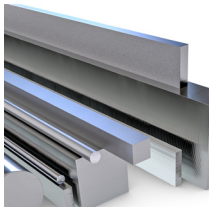
voestalpine Engineered Products are ready-to-use, customized parts made from premium steel materials. We design and manufacture our Engineered Products with all necessary production steps such as machining, heat treatment and high-quality PVD coating.

We offer Engineered Products for a wide variety of applications—mainly for plastic injection molding, high pressure die casting and food processing.

Our Engineered Products include all important features, such as conformal cooling for homogeneous temperature distribution (in additively manufactured products), so that our customers can immediately use the finished part in a tool, machine or assembly with little or no final post-processing.

voestalpine Engineered Products enable higher productivity and lower total cost of ownership per component produced. Thanks to their high wear resistance and therefore service life, they ensure higher part quality and contribute to a reduction in rejects, maintenance and machine downtime.

OUR HIGH PERFORMANCE MATERIALS AND SERVICES AT A GLANCE:



High Performance Steels

Speciality Metals

Valve-and Special Engineering Steel

Powder for Additive Manufacturing

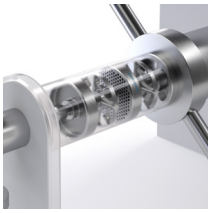
Additive Manufacturing (AM)

Sawing

Machining

Heat Treatment

Coating & Texturing



Engineered Products

MEAT PROCESSING

Engineered Products designed for pure performance

In the meat processing industry, every detail matters—from maintaining strict hygiene standards to ensuring equipment runs efficiently and reducing overall costs. At voestalpine, we understand these challenges and use our extensive material expertise to develop high-quality solutions specifically tailored to your needs. Our Engineered Products are designed for industrial meat processing and provide an optimal balance of wear resistance, flexibility (to prevent cracks), and corrosion protection. This results in significantly longer intervals between regrinding, reducing downtime and increasing productivity. By extending the lifespan of your tools and equipment, our solutions help lower total costs while maintaining high performance and reliability. With voestalpine, you benefit from cutting-edge technology, premium materials, and customized solutions that enhance efficiency and ensure the best results for your meat-processing operations.

In meat processing, efficiency, hygiene, and precision directly impact productivity and costs.

voestalpine develops high-performance steel to create cutting solutions that enhance uptime, reduce expenses and improve product quality.

Our blades stay sharper for longer, minimizing production stops, lowering maintenance costs, and extending regrinding intervals. Crack-resistant steel enhances food safety, reducing contamination risks. A cleaner cut improves meat texture, preserves freshness, and extends shelf life.

Additionally, reduced blade wear lowers energy consumption and minimizes metal particles in meat.

Investing in voestalpine cutting tools means greater efficiency, safety, and quality.

Engineered Products

ENGINEERED PRODUCTS FOR MEAT PROCESSING

To find out more about voestalpine meat grinding technology visit www.voestalpine.com/hpm/food

Efficiency increase

- Significantly reduced total costs of ownership
- Longer lifetime compared to industry standard
- Less maintenance effort
- Higher machine availability and efficiency
- Increased production efficiency

Quality Improvement

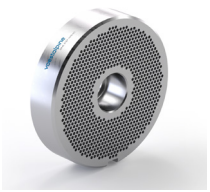
- Ductility (safety against cracks)
- Corrosion resistance
- Outstanding balance of wear resistance
- Improved processing properties
- Increased production efficiency

Benefits for end product

- Fresher and more appealing appearance
- Better texture and consistency
- Extended product shelf life
- Faster drying and smoking times
- Lower metal residues in meat products

MEAT GRINDING TECHNOLOGY FOR STUFFING MACHINES

Engineered Products



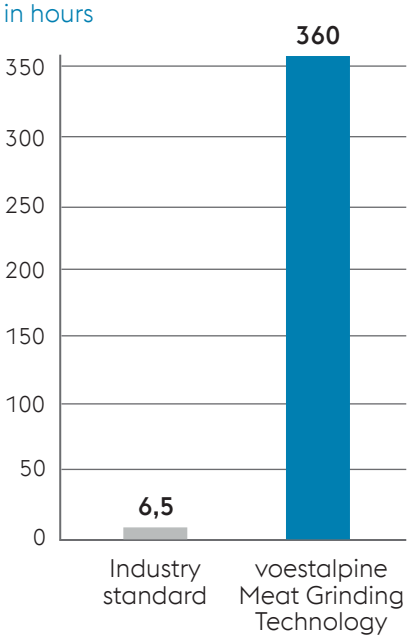
DETAILS:

- A combination of high-performance metals treated to the right hardness with/without PVD coating for high wear resistance
- voestalpine Meat Grinding Technology for minced meat, available for all standard industrial applications
- Dimensions on request (all standard and tailored sizes possible)

CUSTOMER VALUE:

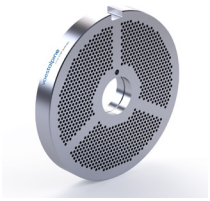
- Shorter drying time for raw sausages
- Higher machine availability and efficiency
- Significantly reduced total cost of ownership
- Extreme wear resistance
- Less maintenance (regrinding) effort
- Improved processing properties
- Less product (meat) contamination
- Improved cutting result

Regrinding interval *
in hours

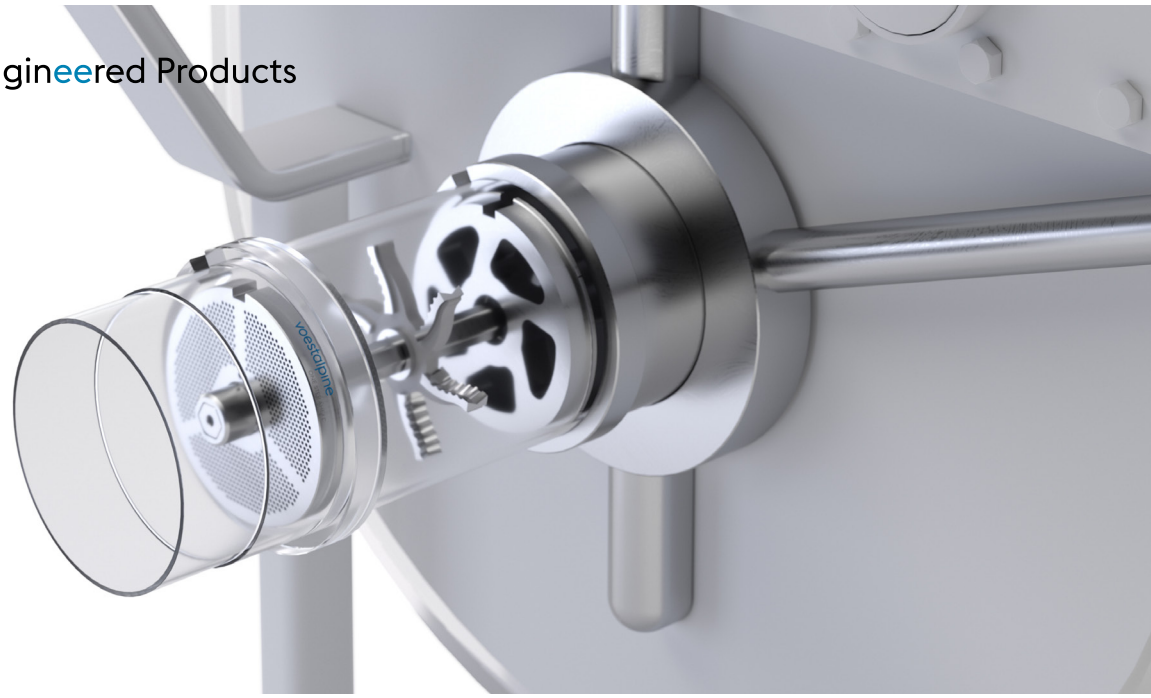


* Each case study is unique and results will vary depending on many factors including the type & recipe of food processed, machine type / parameters and the maturity of the current process.

MEAT GRINDING TECHNOLOGY FOR PRE-CUTTING



Engineered Products



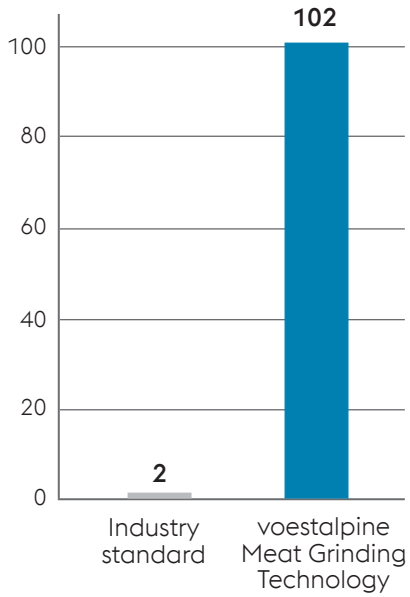
DETAILS:

- A combination of high-performance metals treated to the right hardness with/without PVD coating for high wear resistance
- voestalpine Meat Grinding Technology available for all standard industrial applications
- Dimensions on request (all standard and tailored sizes possible)

CUSTOMER VALUE:

- Higher machine availability and efficiency
- Significantly reduced total cost of ownership
- Extreme wear resistance
- Less maintenance (regrinding) effort
- Improved processing properties
- Less product (meat) contamination

Regrinding interval *
in production days



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READY-TO-USE BOWL CUTTER KNIVES FOR INDUSTRIAL CUTTERS

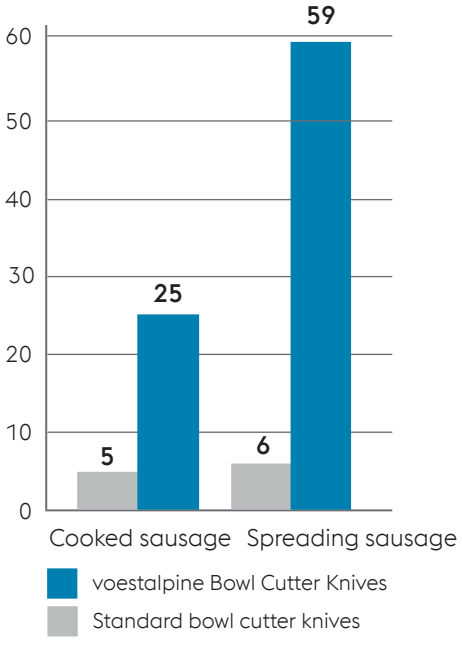
DETAILS:

- Made of cross-rolled, corrosion resistant premium material, with tailored heat treatment for the optimum combination of hardness and ductility, resulting in better wear resistance and improved edge retention
- voestalpine knives available for all standard machine types
- All standard sizes available

CUSTOMER VALUE:

- Longer lifetime compared to industry standard
- Higher machine availability and efficiency
- Ductility (safety against cracks)
- Corrosion resistance
- Outstanding balance of wear resistance
- Significant reduced total costs of ownership
- Less maintenance effort
- Improved processing properties

Throughput before regrinding *
in 1,000 kg



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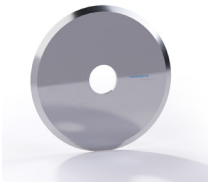
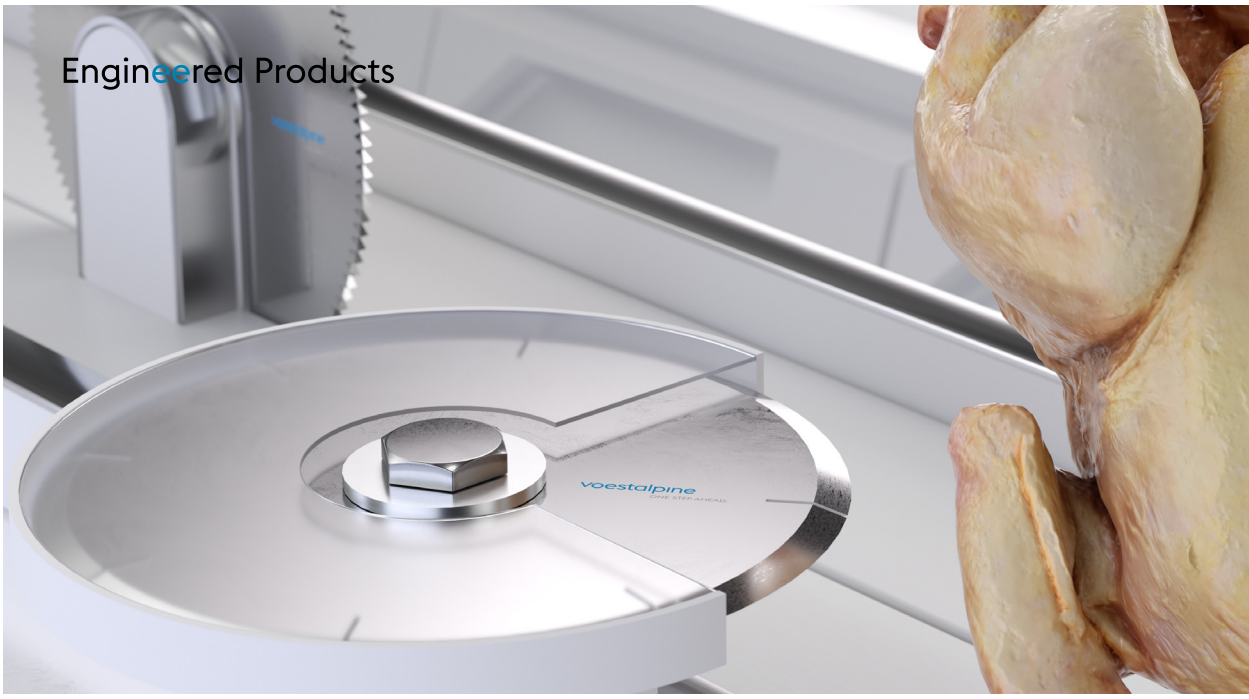
POULTRY PROCESSING TECHNOLOGY



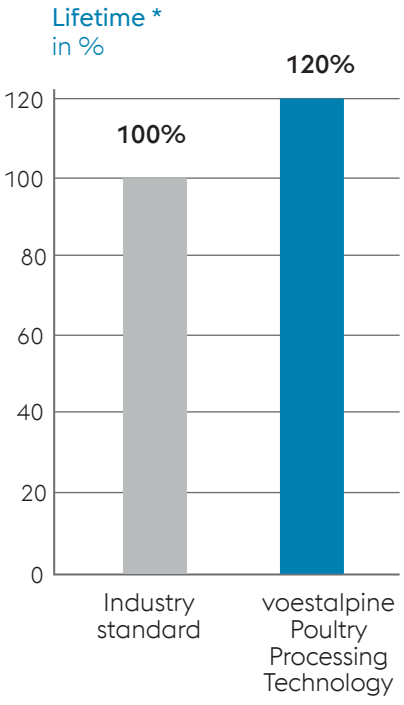


DETAILS:

- Made of cross-rolled, corrosion resistant premium material, with tailored heat treatment for the right hardness level
- voestalpine poultry processing knives are applicable for all industrial machine types
- Dimensions on request (all standard and tailored sizes possible)

CUSTOMER VALUE:

- Longer lifetime compared to industry standard
- Higher machine availability and efficiency
- Significant reduced total costs of ownership
- Outstanding balance of wear resistance
- Less maintenance (regrinding) effort
- Improved processing properties
- Tailored solutions for individual requirements



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OTHER APPLICATIONS

Mill hammers

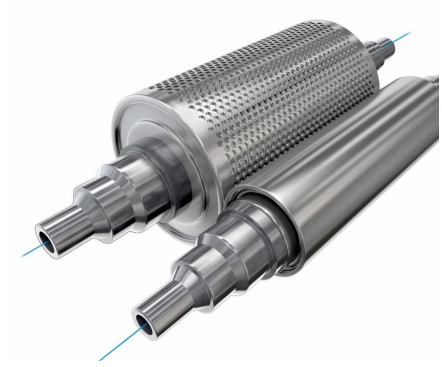
made from high-quality, wear-resistant and durable materials, designed for maximum hardness and extended performance.

Portioning knives

from high-quality, corrosion-resistant materials, designed for superior sharpness and enhanced performance.

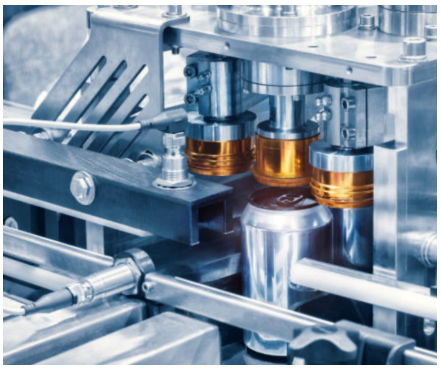
Food extrusion

Corrosion-resistant steels with best wear resistance for longer tooling life.



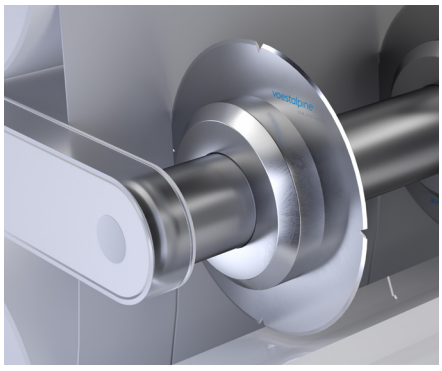
Grain processing

Steel rolls for cereal production made of premium electro slag remelted (ESR) tool steel grades.



Can closing

Rolls made from corrosion-resistant premium materials, specially selected for high wear resistance and best ductility, ensuring an extended life.



Packaging cutting

Film cutting knives made from corrosion-resistant premium materials, designed to keep a sharper edge and increase performance.

SUSTAINABILITY AND FOOD SAFETY

LATEST TECHNOLOY & ENVIRONMENTAL STANDARDS

At our production sites—in Hagfors, Sweden and Kapfenberg as well Mürzzuschlag in Austria—we set new standards for production quality, process reproducibility, and environmental impact. In addition to using resources responsibly, we are constantly implementing new measures for environmentally friendly processes and production.

Our state-of-the-art production processes, such as protective gas electroslag remelting or powder metallurgy, enable us to fulfil the highest quality standards.

Leading by example, we enable our customers to engage in sustainable initiatives while also driving our suppliers and partners to be at the cutting edge of essential transformation processes for tomorrow.

Together, we inspire the change in our industries by always thinking and walking one step ahead.

Here you can find out more about sustainability in the High Performance Metals Division
www.voestalpine.com/inspire

CERTIFIED FOOD CONTACT MATERIALS

The industrial processing of food places high demands on the tools and food contact materials used.

High hardness and wear resistance are required, as well as absolute safety regarding potential health risks that could occur due to contamination of food stuffs through food contact materials. The deciding criterion here is a high resistance to the migration of elements from the steel into food.

We continually carry out quality controls to ensure consistent quality of our steel products and carefully test the behavior of our products in contact with food, so that consumers' concerns about safety can be eliminated.

The state-of-the-art laboratories at our production sites provide important information and product parameters for process control and product certification in accordance with international standards and customer specifications. For food industry certification, we work together with accredited external laboratories.

Since there are a number of different national regulations regarding food contact materials, the Council of Europe has published a guideline for the evaluation of safety in contact with food. This technical document "Metals and Alloys Used in Food Contact Materials" lists acceptable limits for metal migration alongside the testing parameters and food simulant media to be used.

Our steels are certified by AGES and Normpack as safe food contact materials.

MATERIALS BÖHLER

Certified according to Regulation (EC) No. 1935/2004 by AGES

Grades	Material number or AISI number	Heat treatment parameters: Austenization temperature TA [°C]	Heat treatment parameters: Tempering temperature (2x 2h) TT [°C]	Heat treatment parameters: Hardness HRC	Test conditions: Tap water DIN 10531 100°C, 2 hours ○	Test conditions: Citric acid 5 g/l 40°C, 10 days ●
M333 ISOPLAST	–	980/1000	250	51/52	✓	✓
M333 ISOPLAST	–	980/1000	525	48	✓	
M340 ISOPLAST	–	1000	250	56	✓	✓
M340 ISOPLAST	–	1000	525	53	✓	
M368 MICROCLEAN	–	1000	250	56	✓	✓
M368 MICROCLEAN	–	1000	525	53	✓	
M380 ISOPLAST	1.4108	1020***	200	58	✓	✓
M380 ISOPLAST	1.4108	1020***	520	57	✓	
N360****	1.4108	1020***	200	58	✓	✓
M390 MICROCLEAN	–	1150	250	58	✓	
M390 MICROCLEAN	–	1150	525	60	✓	
M303	~1.2316	prehardened		30	✓	✓
N690	1.4528	1050	150	60	✓	
M315	~1.2099	prehardened		30	✓	
M789 AMPO	–	1000	500*	52	✓	✓
N700 AMPO	1.4542	1040	510**	40	✓	✓
N680****	–	1020***	200	58	✓	✓
N700	1.4542	1040	550**	35	✓	✓

○ Test represents use in weakly acidic and mildly salty media

● Test represents long-term use in acidic media

* Precipitation hardened 1 x 3 hours

** Precipitation hardened 1 x 4 hours

*** Treated by sub-zero-treatment after hardening

**** Only available in sheet form

✓ Specific release limits not exceeded

UDDEHOLM
a voestalpine company

MATERIALS UDDEHOLM

Certified according to
Regulation (EC) No. 1935/2004 by NORMPACK

		Heat treatment parameters			Test conditions	
Grades	Material number or AISI number	Austenization temperature TA [°C]	Tempering temperature (2x2h) , *(3x1h) TT [°C]	Hardness HRC	Destilled water 4h at 100°C	3% Acetic acid 4h at 100°C
Stavax ESR	1.2083 / AISI 420	1030	200	50-52	✓	
Mirrax 40	AISI ~420	**prehardened		50	✓	
Idun	–	**prehardened		42-46	✓	
Ramax HH	–	**prehardened		340HB	✓	
RoyAlloy™	–	**prehardened		310HB	✓	
Elmax (*)	–	1080	200	59	✓	
Mirrax ESR (*) (***)	AISI ~420	1020	250	50		✓
Corrax	–	ageing	525	51		✓
Tyrax ESR (*)	–	1050	200	56		✓
Vanax SuperCLEAN	–	1010	200	58		✓
Caldie	–	1050	*540	60	✓	
Dievar	–	1020	560	52	✓	
Impax Supreme	1.2738 / AISI ~P20	850	200	52	✓	
Nimax	1.2344 / AISI H13	**prehardened		40	✓	
Orvar Supreme	1.2344 / AISI H13	1020	575	52	✓	
Sleipner	–	1030	540	62	✓	
Unimax	–	1020	525	57	✓	
Vanadis 4E SuperClean	–	1100	*540	63	✓	
Vanadis 8 SuperClean	–	1100	*540	63	✓	

* Low Tempered

** Delivered condition

*** Sub-Zero Treatment

SPECIALTY MATERIALS OTHERS

Certified according to
Regulation (EC) No. 1935/2004 by AGES

		Heat treatment parameters			Test conditions	
Grades	Material number or AISI number	Austenization temperature TA [°C]	Tempering temperature (2x 2h) TT [°C]	Hardness HRC	Tap water DIN 10531 100°C, 2 hours ○	Citric acid 5 g/l 70°C, 2 hours ●
ROYALLOY	1.2095	prehardened		appr. 32	✓	
ULTRACHEM	–	prehardened		appr. 40	✓	✓
EDRO 400	–	prehardened		appr. 40	✓	

○ Test represents use in weakly acidic and mildly salty media ● Test represents long-term use in acidic media

PVD COATINGS EIFELER

PVD (Physical Vapour Deposition) is a process for the synthesis of hard coatings based on ionized metal vapor at process temperatures of approx. 450 °C. The most common methods used by the voestalpine eifeler Group are cathodic sputtering (magnetron sputtering) and cathodic arc evaporation (cathodic arc).

PVD Coatings are ceramic coatings that are only a few micrometers thin. All PVD processes are carried out under vacuum conditions to ensure purity.

In food processing, knives and other equipment often suffer from abrasion. This abrasive wear can be minimized by the usage of PVD coatings. Another possible application is for the reduction of friction. Our coatings are certified for biocompatibility.

Duplex treatment = Plasma Nitriding + PVD Coating System in one process

The PVD duplex treatment comprises a nitriding of the tool surface based on a specifically adapted plasma process, on which the immediately subsequent deposition of a PVD layer takes place without interrupting the vacuum process. This combined procedure (2-steps in one process) leads to a defined increase in the surface strength and load-bearing capacity of the tool / component with subsequent targeted coating application.

Name	Micro-hardness HV 0.05	Friction Coefficient	Thickness [µm]	Max. Application Temperature (°C)	Color
EXXTRAL®	3.300 ± 300	0,7	2 - 5	800	anthracite
EXXTRAL®-ULTRAFINE	3.300 ± 300	0,4	2 – 3	800	anthracite
TiN	2.300 ± 300	0,6	1 – 4	500	gold
TiN ultrafine	2.800 ± 150		2 – 4	500	gold
TiCN	3.500 ± 500	0,2	1 – 4	400	blue-grey
TiCN ultrafine	3.500 ± 500		2 – 3	400	anthracite blue
CrN	2000 ± 600	0,3 – 0,4	1 – 6	600	slate gray
ZrN	2.800 ± 300	0,5	1 – 4	600	light yellow
VARIANTIC®	3.500 ± 500	0,2	2 – 4	800	old pink
CARBON-X®	2.400 ± 400	0,05 – 0,15	1,5 – 2,5	325	black gray
CARBON-X®-AL	2.400 ± 400	0,05 – 0,15	3 – 4	325	dark grey

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