



HIGH PERFORMANCE STEELS FOOD INDUSTRY SOLUTIONS

A HERITAGE TO BE PROUD OF

GROUND BREAKING INNOVATIONS IN MATERIALS SINCE 1668

Our reputation as the most innovative tool steel producer in the world is built by providing tooling solutions, technical expertise and support to customers since 1668. Placing customers at the heart of our business is what motivated us to invest in our sales structure around the world. We started by establishing companies in our two largest export markets outside Sweden, the first was Uddeholm General Agencies Ltd, established in Birmingham in 1923, closely followed by New York in the United States in 1925. Today you can find us in over 90 countries around the world.

ENGLAND
1923



SWEDEN
1668

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COMPLETE SOLUTIONS

TOOLING FOR THE MOST CHALLENGING APPLICATIONS



TECHNICAL CONSULTATION

The selection of tool steel has an impact on the tools performance and your profitability. Book an onsite consultation with one of our experts to evaluate the steels that best suits your application.



MATERIAL SOLUTIONS

Our expertise in High Performance Metals counts in applications where general engineering steels are deemed insufficient. We hold the UK's largest stock in our award-winning stock facility.



COMPONENT SERVICES

Our experience in the tooling industry is now being applied to components. We provide solutions which reduce high maintenance costs and minimise production downtime.



WORKING IN PARTNERSHIP

We value the close working relationships we have built with our customers and subcontractors across a host of applications. Whether it is material properties, new steel grades or analysing customer tools to improve efficiencies, our technical team in the UK work closely with our production facility to deliver unrivalled tooling solutions.

Whilst our production, research and development is based in Sweden, we have regional experts across the world, working in partnership with our customers. This regional structure, and our continued investment in product development and our services ensures we are well placed to support you.

STEEL APPS

We have developed two distinctive Apps to support the selection and specification of our high performance special steels. The Uddeholm Steel App allows you to review our range of tool steels and applications.

Our Machining Guide App will suggest suitable steel specification based your tooling application, it will also recommend which settings you should use to achieve optimum results. You can even save your calculations and share them with us and your colleagues.

Download the free Uddeholm Machining Guideline & Uddeholm Steel book today. Visit www.uddeholm.co.uk for the link.

UDDEHOLM STEEL GRADES CERTIFIED BY NORMPACK

You can be confident relevant Uddeholm steel grades are certified in accordance to the European Union legislation (1935/2004). This ensures materials can be used in the following areas:

- Dry food
- Acid food
- Alcoholic food
- Fatty food



Food type	Food simulants
Aqueous foods (pH>4.5)	Distilled water
Aciduous foods (pH<4.5)	3% acetic acid
Alcoholic foods	10% ethanol
Fatty foods	Refined olive oil
Dry foods	N/A

FOOD INDUSTRY

Safe, efficient production with minimal downtime is paramount in the international food processing industry. A demand that Uddeholm's unique product offering can meet. As the world's leading manufacturer of tool steel, our high performance materials have been specifically tested for the food industry. We work closely with our customers in the most demanding applications.

Food processing companies, which have previously sacrificed wear resistance for corrosion resistance or vice versa, no longer have to settle for just one of these properties. With the products in the Uddeholm Stainless Concept, there is a solution for the most demanding working materials.

These steel grades are all certified by Normpack for the requirements in the food industry, according to European Union legislation (1935/2004). They all meet the requirements for materials that come into contact with food. Examples of relevant components are various types of knives, rolls, screws, screw segments and barrels for the extrusion of food, hole plates for mincing meat, and pellet dies for the production of animal feed.

Achieving the best results takes time and dedication. It all boils down to selecting the right materials during every step of the production process and in every single component.

We work as your partner throughout the whole process – from initial concept to the finished product. Our high performance steel can be supplied as finished components via our Uddeholm Component Business concept; delivering you advanced performance solutions with better results and a longer life span, keeping your production running.

Uddeholm steel grade	Dry	Aqueous	Acid	Alcohol	Fatty
Caldie	●	●	●	●	●
Corrax	●	●	●	●	●
Elmax Low Tempered	●	●	●	●	●
Mirrax 40	●	●	●	●	●
Mirrax ESR Low Tempered	●	●	●	●	●
Sleipner	●	●	●	●	●
Unimax	●	●	●	●	●
Vanadis 4e	●	●	●	●	●
Vanadis 8	●	●	●	●	●
Vanax	●	●	●	●	●

IMPROVED PROFITABILITY WITH UDDEHOLM SPECIAL STEEL

Uddeholm Component Business offers a first class tool steel solution for applications where conventional engineering steel is insufficient. Choosing the most suitable steel grade is an important decision to make when designing products subject to heavy loads, heavy wear, corrosion or high temperatures. The qualities of Uddeholm special steel contribute to an optimised design, increased performance, less maintenance cost and the best total tooling economy.

Our team of specialists can take your existing component for test and in return provide an optimal solution using one of our High Performance Steel grades which deliver greater efficiency and cost savings for your application. You don't even need drawings, our engineers can create an upgraded component based on your existing tooling.



PROPERTIES

UDDEHOLM TOOL STEEL	DELIVERY HARDNESS ~HB	RECOMMENDED HARDNESS HRC	YIELD STRENGTH Rp0.2 (Mpa)	TENSILE STRENGTH (Mpa)
IMPAX SUPREME ¹⁾	310	33	900	1000
NIMAX ¹⁾	380	40	785	1265
RAMAX HH ¹⁾	340	37	990	1140
MIRRAX ESR	250	50	1290	1780
MIRRAX 40 ¹⁾	380	40	1020	1150
ELMAX SUPERCLEAN	250	58	2200	2900
CORRAX	330	46	1400	1500
STAVAX ESR	190	50	1460	1780
BURE	180	42	1200	1400
ORVAR SUPREME	180	48	1350	1600
DIEVAR	160	50	1470	1770
UNIMAX	185	56	1780	2150
CALDIE	215	60	2350 ²⁾	-
SLEIPNER	235	60	2350 ²⁾	-
VANADIS 4 EXTRA SUPERCLEAN	230	62	2530 ²⁾	-
VANADIS 8 SUPERCLEAN	<270	62	2600 ²⁾	-
BALDER ¹⁾	420	44	1230	1440
IDUN	420	44	1250	1490
VANAX SUPERCLEAN	260	60	1920	2240

¹⁾ Prehardened
²⁾ Compressive strength

PORK MINCE PRODUCTION

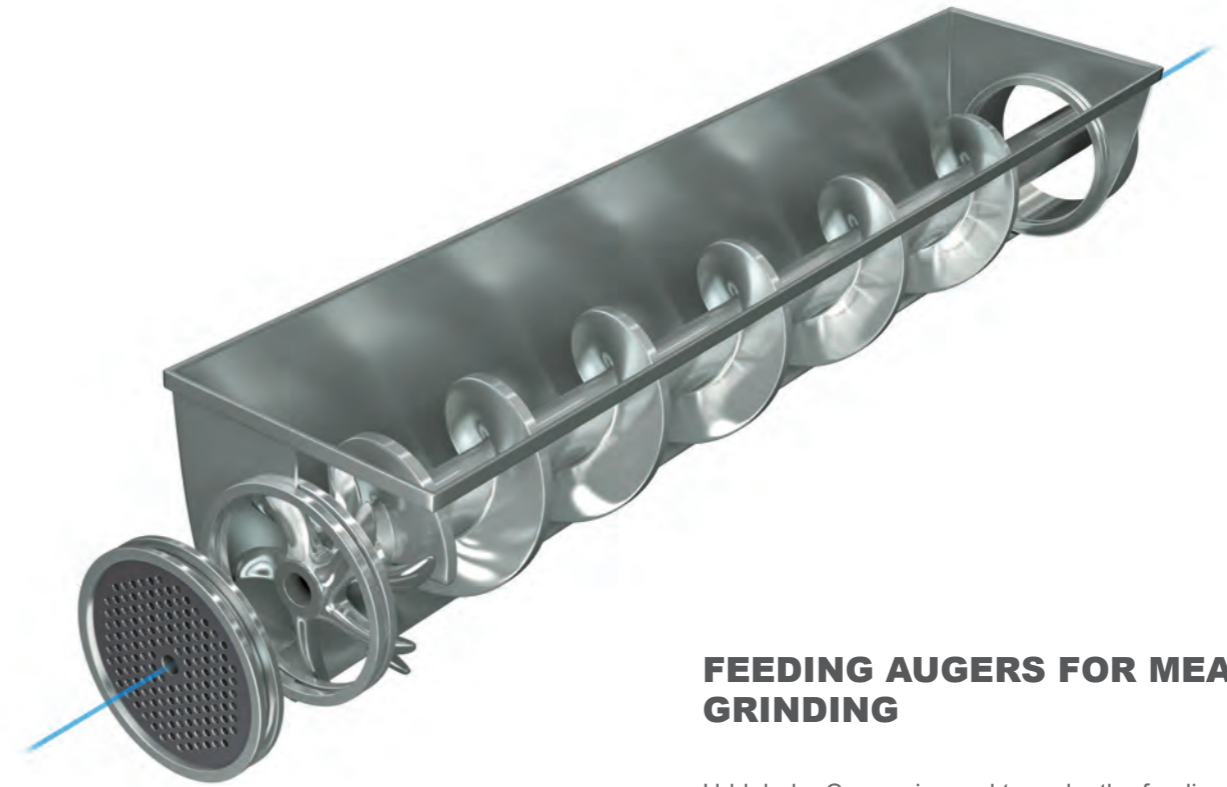
Previously only 6-7 hours of pork mince production was achieved before all five components required regrinding. Uddeholm's solution was to replace the holeplate component with Vanadis 4Extra coated with Eifeler PVD Variantic to achieve greater wear resistance. Unimax was chosen for the knife component for greater ductility and once again resulted in much higher wear resistance.

The coated parts have been in production for one year, without any sign of wear. A production run of 150 days can be achieved with regrinding required on only two of the knives every 15th day. Fewer machine adjustments is delivering higher production safety. Additionally, a significant improvement in the meat quality has been achieved as pieces are now more uniform.



RESULT

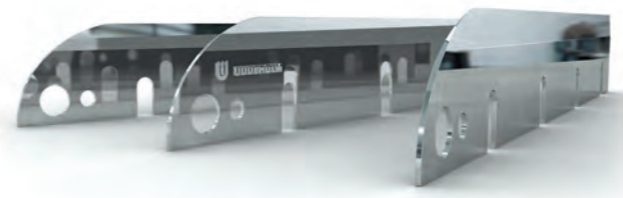
- Operating expenses on component parts reduced by 80%
- Metal residues in the meat reduced by 90%
- Drying time reduced by 12-14%
- Electricity consumption reduced by 8-10%
- Uniform and better meat quality
- High production safety – fewer adjustments



FEEDING AUGERS FOR MEAT GRINDING

Uddeholm Corrax, is used to make the feeding augers in this meat grinding machine. The machine is designed to grind both fresh and frozen meat down to -20°C. Corrax is part of the Uddeholm Stainless Concept, designed to deliver better performing alternatives to the conventional steels used in the food processing industry.

Uddeholm Corrax is a precipitation hardening steel which offers exceptional corrosion resistance, excellent dimensional stability during hardening, good wear resistance and is easy to heat treat.



RESULT

It pays to invest in high performance steels. Corrosion resistant dimensionally stable knives ensure cleaner premium cuts of meat which have a higher value and result in less overall wastage.



AN EDGE ABOVE THE REST

Uddeholm has teamed up with Precision Edge Ltd to offer the best in performance for machine knives and blades. This collaboration comes from a mutual understanding that when combining #1 in High Performance Tool Steel with quality manufacturing and tight process control the resulting components are an “edge above the rest”.

Precision Edge is a specialist manufacturer of quality industrial blades and machine knives. With over 25 years’ experience in producing blades and knives, gaining a reputation for supplying machine knives of the highest quality and industrial blades suitable for the most demanding applications such as food processing and packaging lines.

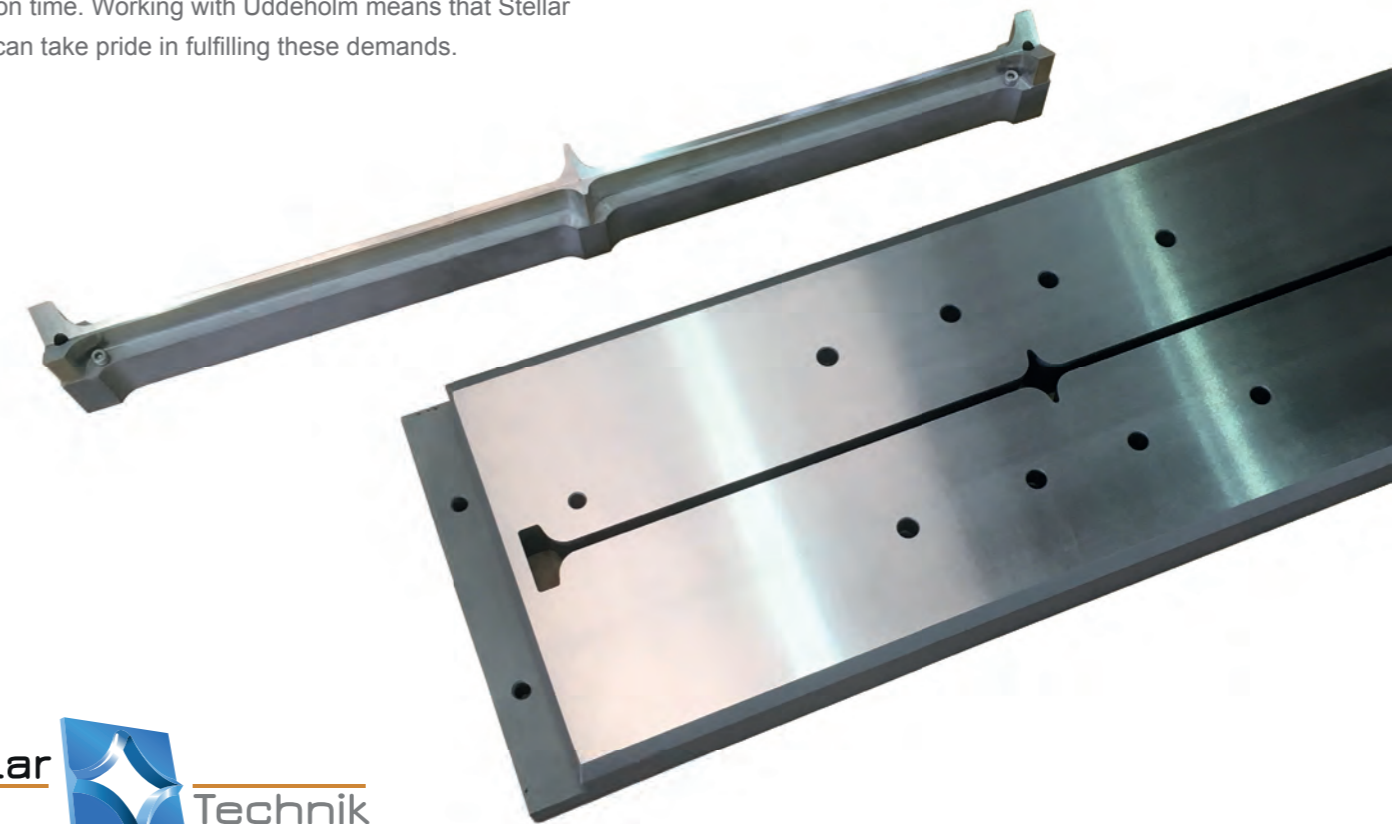
RESULT

“We found that by using Uddeholm High Performance Steels and their knowledge of application-based materials, the components we supply have significantly out-performed our customers production expectations. Our components now last longer as they retain their edge for longer during production, resulting in minimising our customers downtime.

A great example of the Uddeholm Total Tooling Economy ethos.”

Stellar Technik has grown to become one of the leading manufacturers and suppliers of food packaging tooling worldwide. Capabilities range from punch and dies for food packaging, as well as thermo form tooling for both the food and pharmaceutical industries, to extruders and special applications for cheese production and packaging. The industry demands competitive prices, the highest quality and delivery on time. Working with Uddeholm means that Stellar Technik can take pride in fulfilling these demands.

The NEW deep ‘V’ punch and die manufactured from Uddeholm Stainless Steel was launched at the 2018 UK Processing and Packaging Machinery Event. The new die has been specially developed for use in environments where hygiene requirements are critical.



www.stellartechnik.com

RESULT

“Using Uddeholm steel results in dramatically improved corrosion resistance, improved tool life and reduced maintenance costs. The new die has been developed for use in environments where hygiene requirements are critical. Designed and manufactured in the UK by Stellar Technik to fulfil specific customer demand.”



Since 1993 Howard Ramsden (Diespec) Limited has brought-to-market high quality gun drilled dies, manufactured and heat treated to suit individual needs. All dies are fully run-in to our special running in compound.

Modern technology computerised die specifications have increased life and maximised performance giving increased throughputs with the unique parallel hole pattern adapted by Howard Ramsden in 2000.

Working in partnership since 2010, the new high performance die made from Uddeholm material has delivered over £20.4k worth of savings on every 155 tons of material produced. The new die is a culmination of the industry knowhow of the team at Howard Ramsden and the materials and technical understanding at Uddeholm.

It pays to use higher performing materials, Howard Ramsden (Diespec) Limited now use just one die instead of three dies in a 155,000 ton production run. This has resulted in 21% saving in electricity.

COST COMPARISON ON 155,000 TON PRODUCTION RUN

	Fixed Cost	Electricity Cost	Total Cost
Previous Die	£6,782	£115,193	£121,975
Uddeholm Die	£10,600	£90,968	£101,568

RESULT	Saving: £20,407
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BUSINESS ECONOMY FOR CEREAL PRODUCTION

DRB has a long standing relationship with Uddeholm to deliver improved efficiency to their customer base. An example of this was using Uddeholm Caldie to manufacture rolls for cereal production. The end result was lower production and maintenance costs.

Their customer was using a standard A2 material for their production rolls. This resulted in 500 production hours and eight production stops per year. Changing their material to Uddeholm Caldie increased their production time to 1800 hours whilst reducing maintenance stops to only two per year.

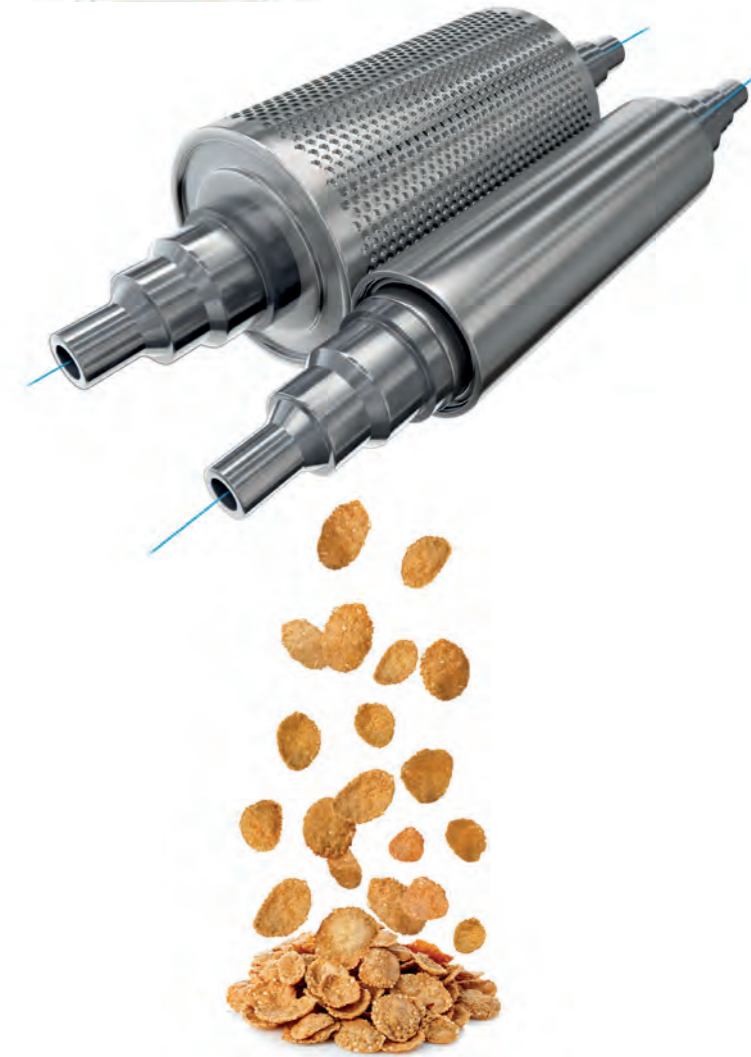
Selecting Uddeholm tool steel really does result in the best production economy. Uddeholm Caldie is an electro slag remelted (ESR) tool steel grade particularly well suited for rolls used to form and size multigrain substances in the production of corn and wheat. Thanks to its hardness of up to 62 HRC in combination with high ductility and toughness, Caldie is an excellent choice for components with high demands on chipping/cracking resistance and compressive strength.

Uddeholm also offers suitable materials for other components such as shafts and machine parts where conventional engineering steel or stainless steel are insufficient.

EFFICIENCY COMPARISON OVER ONE YEAR

	Material	Production Hours	Maintenance Stops
Previous Grade	AISI A2	500	8
Uddeholm Solution	CALDIE	1800	2

RESULT	260% improvement in production hours. 75% reduction in maintenance stops.
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SCREWS & BARRELS

A SOLUTION FOR EVERY NEED

PROVIDING NEW POSSIBILITIES

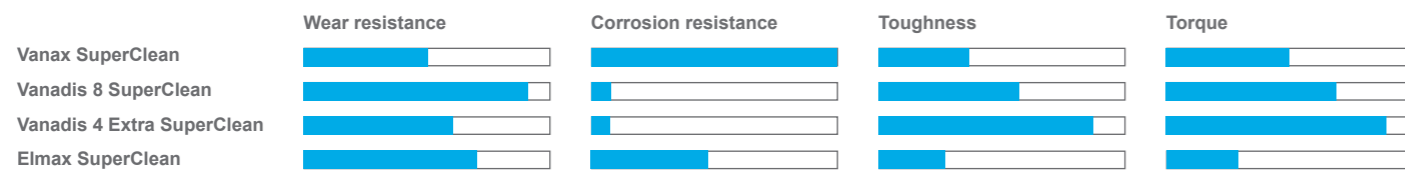
Both technology and raw material are key factors when selecting the optimal steel grade for screws. We know that the quality and performance of the screw are crucial, because its durability and efficiency have an economic impact for the manufacturers.



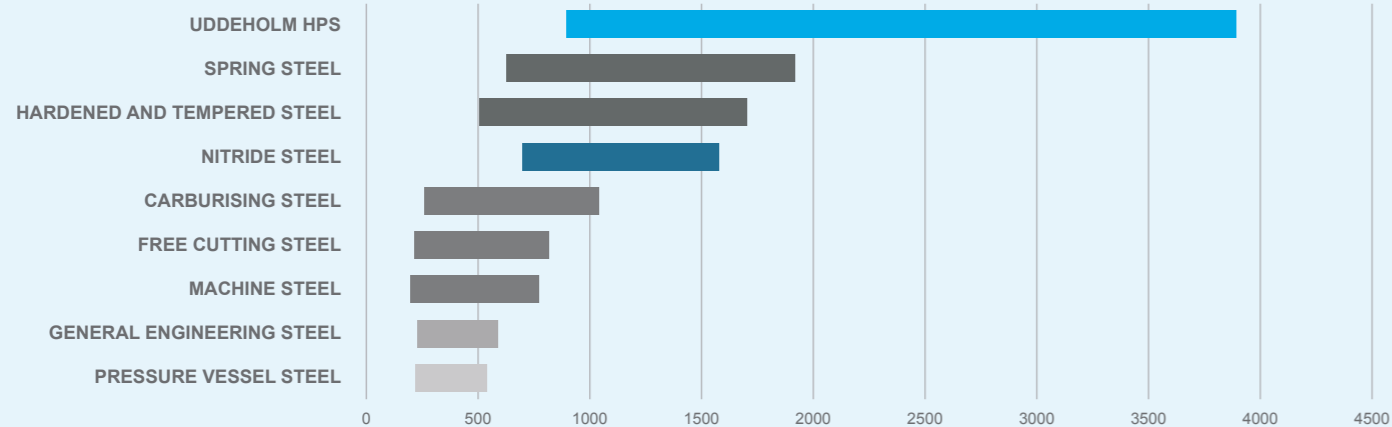
With market leading metallurgy and production technology we develop the intelligent high performance steel that your complex shapes and challenging conditions require.

These four premium PM-steel products for high performance screws are selected for their unique high resistance to wear and corrosion.

PROPERTY COMPARISON



YEILD POINT MPa



STAINLESS CONCEPT

RUST NEVER SLEEPS

Uddeholm Stainless Concept is our own system of metallurgically balanced stainless grades that have been specially developed and continually refined to meet the needs of an evolving industry.

These sought-after mechanical properties make steel grades from Uddeholm Stainless Concept perfect not only in traditional tooling applications, but also for manufacturing components with high demands.

Aware that standard stainless steel grades have relatively low wear resistance and strength, we developed Uddeholm Stainless Concept to offer a unique combination of corrosion resistance, wear resistance and high strength.



The need for additional heat treatment is eliminated when using the following Uddeholm prehardened stainless steels, which deliver improved productivity and performance.

Uddeholm RoyAlloy™

This corrosion resistant holder steel is a new addition to the Uddeholm range. It is widely used for bolsters which no longer need plating or coating for further corrosion resistance, whilst delivering good machinability.

Uddeholm Mirrax® 40

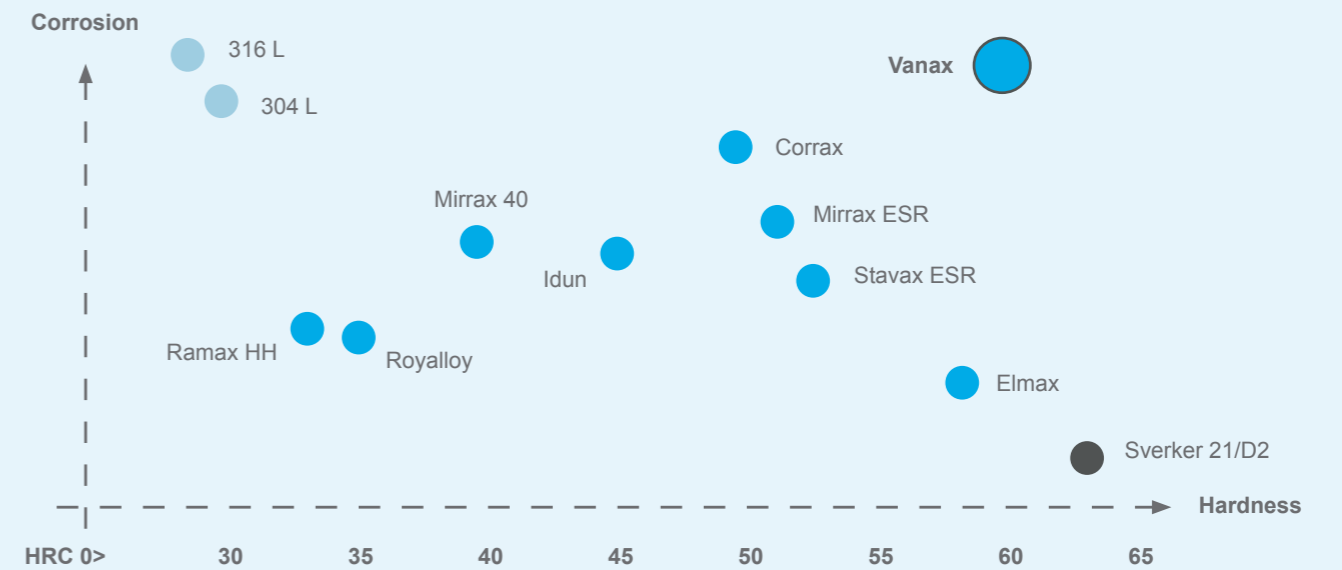
This unique steel grade is pre-hardened for faster component manufacturing. Its high purity and excellent corrosion resistance makes it an excellent choice for corrosive environments.

Uddeholm Ramax® HH

Uddeholm Ramax HH is supplied at a higher hardness level than other corrosion resistant pre-hardened grades. This gives you more durable structural engineering parts.

Uddeholm Corrax®

Uddeholm Corrax is a precipitation hardening steel with extremely good corrosion resistance and easy to heat treat, making it an ideal choice for components that require extreme stability after hardening.



● Uddeholm stainless grades ● Austenitic stainless ● Standard grades

HAND KNIVES

CLEAN, CLEANER, SUPERCLEAN

Our superior powder metallurgical (PM) SuperClean steels have been designed with knife manufacturers in mind; it means steel that results in sharper edges, tougher blades and trouble-free production with excellent grinding and polishing properties.



Uddeholm Vanax
used in Kershaw TILT

CHEMICAL COMPOSITION

Uddeholm Vanax SuperClean

The high content of soluble chromium, molybdenum and nitrogen in the matrix results in Uddeholm Vanax's excellent corrosion properties.

	C	N	Cr	Mo	V
ANALYSIS %	0.36	1.55	18.2	1.1	3.5

Uddeholm Elmax SuperClean

The high chromium content gives Uddeholm Elmax good corrosion resistance. The addition of vanadium and high carbon content improve hardness and abrasive wear resistance.

	C	Cr	Mo	V
ANALYSIS %	1.7	18.0	1.0	3.0

Uddeholm Vanadis 4 Extra

The alloy design and combination of carbon and vanadium are balanced to form a relatively low amount of small but very hard vanadium carbides. This results in a steel with good wear resistance and maximised toughness.

	C	Cr	Mo	V
ANALYSIS %	1.4	4.7	3.5	3.7

Uddeholm Vanadis 8 SuperClean

The combination of a very high carbon content with a high amount of chromium and vanadium leads to the formation of a very large volume of chromium and vanadium carbides. This gives the high wear resistance.

	C	Si	Mn	Cr	Mo	V
ANALYSIS %	2.3	0.4	0.4	4.8	3.6	8.0

Uddeholm Sleipner

A tool steel with properties well suited for knives. Good wear resistance, good resistance to chipping and high compressive strength give a knife with good edge retention.

	C	Mn	Cr	Mo	V
ANALYSIS %	0.9	0.55	7.8	2.5	0.5

C - Carbon, N - Nitrogen, Cr - Chromium, Mo - Molybdenum, V - Vanadium, Mn - Manganese, Si - Silicon



Our desire to improve productivity and the cutting of difficult and hard work materials inspired us to develop the best tool steel in the world. If we can improve tool performance in the most demanding industrial applications, imagine what it can do for your knife blade performance.



Uddeholm Vanadis® 4 Extra SuperClean
THE RELIABLE CHOICE

A PM tool steel grade designed for maximum toughness and recommended for use in tactical utility knives, where high reliability is needed. Although it can be hardened to 64 HRC, the recommended hardness range is 58–62 HRC.

Uddeholm Vanadis 8® SuperClean
WHEN WEAR RESISTANCE IS THE KEY

Uddeholm Vanadis 8 has a very high alloy content with 8% vanadium and a hardness of 60-64 HRC that makes this our most wear-resistant PM grade. The high wear resistance of Uddeholm Vanadis 8 is combined with excellent chipping resistance and toughness. This makes Uddeholm Vanadis 8 suitable for knives where abrasive wear is predominant.

Uddeholm Sleipner®
A UNIVERSAL KNIFE STEEL

Uddeholm's modern version of the classic D2/W1.2379 tool steel with improved toughness to better fit active knife use. Even though this is not a PM steel, the finer steel structure in Uddeholm Sleipner gives better machinability, polishability and edge retention. The hardness range is 58–64 HRC.

Uddeholm Vanax® SuperClean
A TRUE REVOLUTION IN THE WORLD OF KNIFE STEEL

Uddeholm Vanax, with its excellent corrosion resistance and toughness, is the most innovative powder metallurgical knife steel on the market today. It is perfectly suited for the most demanding applications, like salt-water tactical knives, as it gives an outstanding blade that retains its edge, regardless if used in corrosive and high wear environments, with a minimum need of maintenance.

Uddeholm Elmax® SuperClean
THE BEST ALL-ROUND KNIFE STEEL

Uddeholm Elmax is a perfectly balanced PM grade which has been designed to reach a hardness well over 60 HRC with good corrosion resistance and excellent edge retention. The superclean production process combined with small sized powder and carbides guarantees trouble-free grinding and polishing. Our process and powder properties also ensure a super fine edge and that it can be ground even at hardnesses up to 62 HRC.

Uddeholm is proud to work in partnership with many expert craftsmen and artisans who use their skills in conjunction with the best materials to produce unique knives to be treasured for a lifetime. One example is Duncan Chandler who set up Dorset Woodland Blades, creating knives that are “designed to work and engineered to last”. Peter Eaton, who runs Peter Eaton by Design, is another example who creates bespoke handmade knives.

Both Peter and Duncan are passionate about creating high quality knives using the best possible raw materials, including Uddeholm Elmax stainless steel. For Peter this uncompromising approach to design, quality and ethical sourcing of raw materials means he produces his own stabilised wood for the handles, which is impervious to moisture or blood. This is particularly beneficial to deerstalkers where both performance of the knife and hygiene are a priority.

Peter's business ethos is built on “uncompromising quality and sharpness redefined”. His stainless steel of choice is Elmax due to its excellent properties when being ground after heat-treating, especially as it cuts incredibly fast and clean with ceramic belts, making the production process efficient and cost effective. The unique structure of the stainless steel means a knife blade can be honed to an extremely sharp and long-lasting edge.

The availability of sheets in various thicknesses means multiple blanks can be produced in large batches. The blanks are vacuum heat treated and cryogenically soaked to achieve optimum hardness and consistency throughout the entire batch.



Peter Eaton by Design knife made using Elmax



RESULT

Uddeholm steels are the preferred choice for artisan knife makers, where craftsmanship and performance count. Designed to reach up to 60HRC for both Elmax and Vanax means you no longer have to compromise corrosion resistance for wear resistance. Uddeholm makes it possible to have the best of both worlds.



Uddeholm is present on every continent, ensuring high-quality Swedish tool steel and local support wherever you are. We continually invest to secure our position as the world's leading supplier of tooling material, and constantly monitor our operations and procedures in order to provide you the best service.

TRUSTED TO DELIVER



All high performance engineering steel stock is held in our new purpose-built warehouse facility at our headquarters in Oldbury, West Midlands. The new Kasto system is the tallest in the UK and one of the largest in Europe.

VALUE ADDED SOLUTIONS



Our cutting, machining, bevelling, testing and other services provide turnkey solutions to our customers. This includes an onsite material testing service used when customers require additional certification to that supplied by the mill.

Our goal is clear – to be your number one partner and tool steel provider



CONTACT US

For all enquiries and order progress queries please contact our internal sales team.

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Email: sales@uddeholm.co.uk

For more information, please visit www.uddeholm.co.uk

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**#1 IN HIGH
PERFORMANCE
TOOL STEEL**

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