

For Superior Hot Forming Tools

SKOLVAR

TAILORMADE

TO OUTPERFORM THE CHALLENGES



The word Skol comes from Norse mythology. Skol is one of two wolves that chase the sun and moon across the sky and Skol is the one chasing the sun. To be able to chase the sun, it needs the properties found in the product: hot wear resistance and the ability to withstand extreme heat without losing hardness or durability.



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ASSAB offer a wide range of high-quality hot forming material for superior performance in a variety of applications. The unique forging grade Skolvar is designed to withstand extreme heat, pressure and wear, making it ideal for the most demanding hot forming applications.

To improve the heat resistance of hot forming dies and reduce the risk for wear, manufacturers may use high-performance materials such as Skolvar. This material has excellent thermal stability and can withstand the high temperatures and load involved in the forming process.



The Challenges

SUPERIOR HOT FORMING TOOLS

One of the main challenges in selecting materials for hot forming dies is ensuring hot wear resistance. With high contact pressures and temperatures, the die surface can wear significantly, leading to a decrease in dimensional accuracy of the final product.

Many tool steels, such as AISI H13 and H11 types, are commonly used but do not have the properties required to resist hot wear. Higher alloyed grades, such as AISI D2 types, improve hardness and wear resistance but lack high-temperature stability, making them non-durable and not resistant to hot wear for long production cycles. Therefore, it is crucial to choose a material that is highly hot wear resistant and can withstand these harsh conditions.

Temper back is a condition that occurs when the die surface is exposed to high temperatures over time. This can cause a drop in hardness, strength, wear resistance, and the ability to maintain its shape. To avoid this, it is important to use alloying elements that give high temper back resistance.

Hot strength is another important factor to consider. The die material must be strong enough to handle the significant load and forces exerted during the hot forming process without deforming. Yield and proof strength of a material has normally a tendency to significant drop at elevated temperature.

Skolvar with its properties resist this significant drop making it less vulnerable for plastic deformation during the hot forming process. For superior hot forming tools these properties lead to increased efficiency and decreased maintenance costs.





The solution

Fortunately, the game changer is here - Skolvar. This material is specifically designed for hot forming tools and has the best combination of hot wear resistance, hot strength and high temper back resistance. This is achieved through an optimized manufacturing process and a fine-tuned chemical composition. Together it gives a superior property profile tailor-made for your next demanding hot forging application.



The performance of hot forming dies used in high demand applications is critical to the quality and precision of the final product. These dies must be made of materials that can withstand the high temperatures and pressures of the forming process without deforming or wearing out. Accuracy and consistency are also important factors to consider.







Skolvar is developed to meet your strictest quality standards through Electro Slag Remelting (ESR). It is an ideal material for a variety of hot forming applications, including automotive, aerospace, energy, medical, and more.

Skolvar meets your exact specifications so you can rest assured that you are getting the best quality for your high-demand products.





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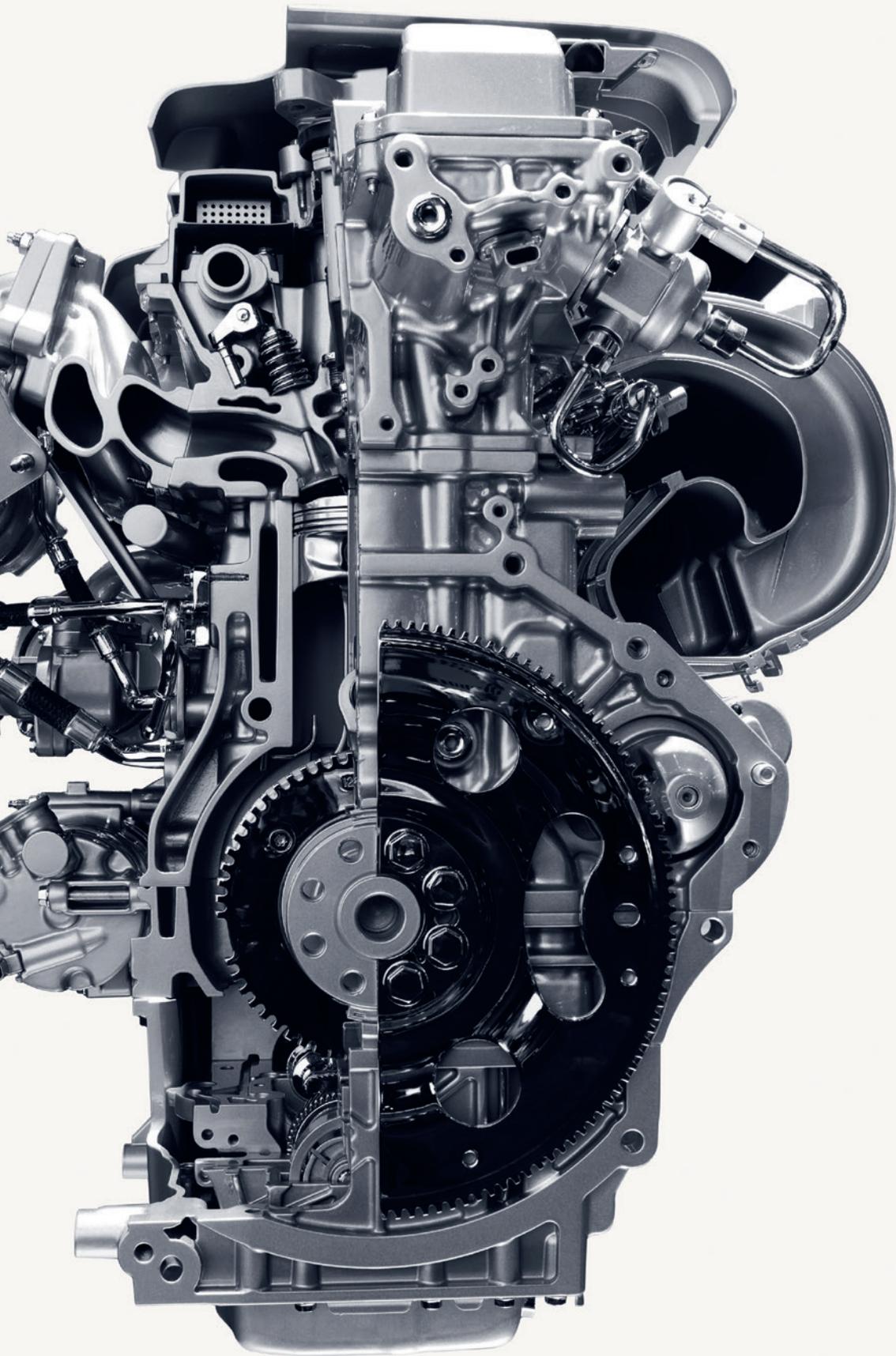
Application areas

THE DURABILITY YOUR TOOLS NEED

Selecting the right material for your forging project is crucial to ensure that your parts meet the highest standards of quality and performance.

By using Skolvar, you can benefit from its superior strength and durability, excellent wear and heat resistance, consistent quality and performance, and wide range of sizes available. Skolvar is perfect for several forging applications and press hardening dies, including those that require high-strength materials or longer forging cycles.

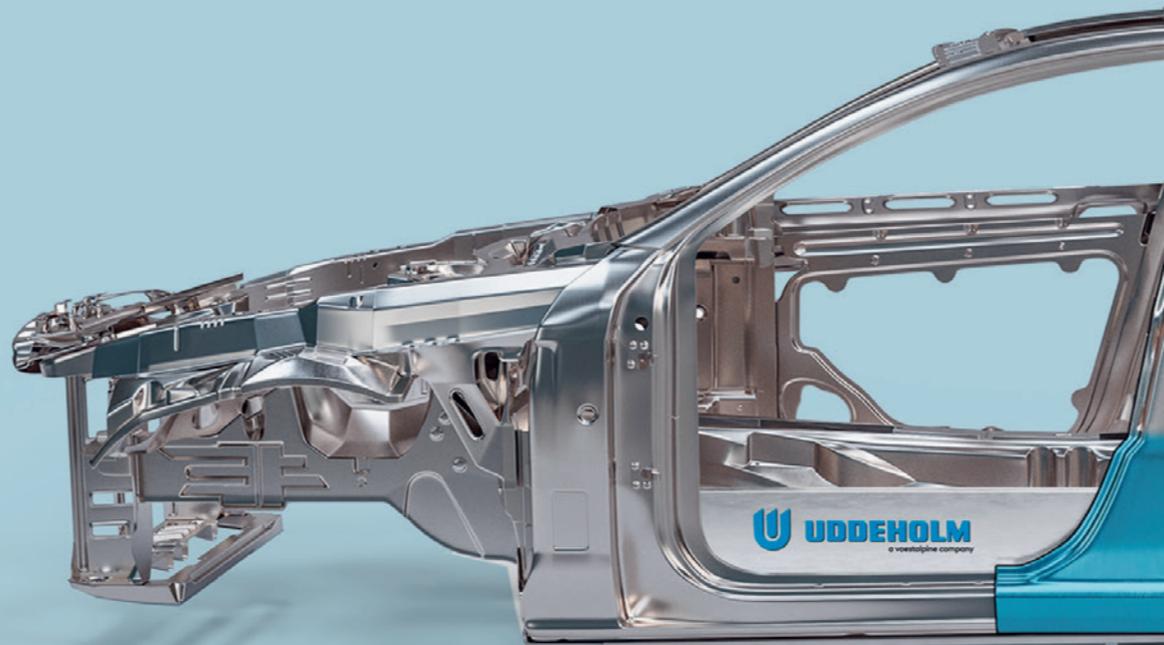
The challenges that come with forging complex shapes of titanium, stainless steel, and nickel base alloys. That's why we recommend using Skolvar. With Skolvar, you can achieve accurate and repeatable production of parts while keeping costs under control.







Forming dies can be expensive and time-consuming to manufacture, which is why many manufacturers prefer to extend their lifespan by performing die recuts. Skolvar is an ideal material for die recuts, it can be refurbished through various methods including machining, grinding and welding.



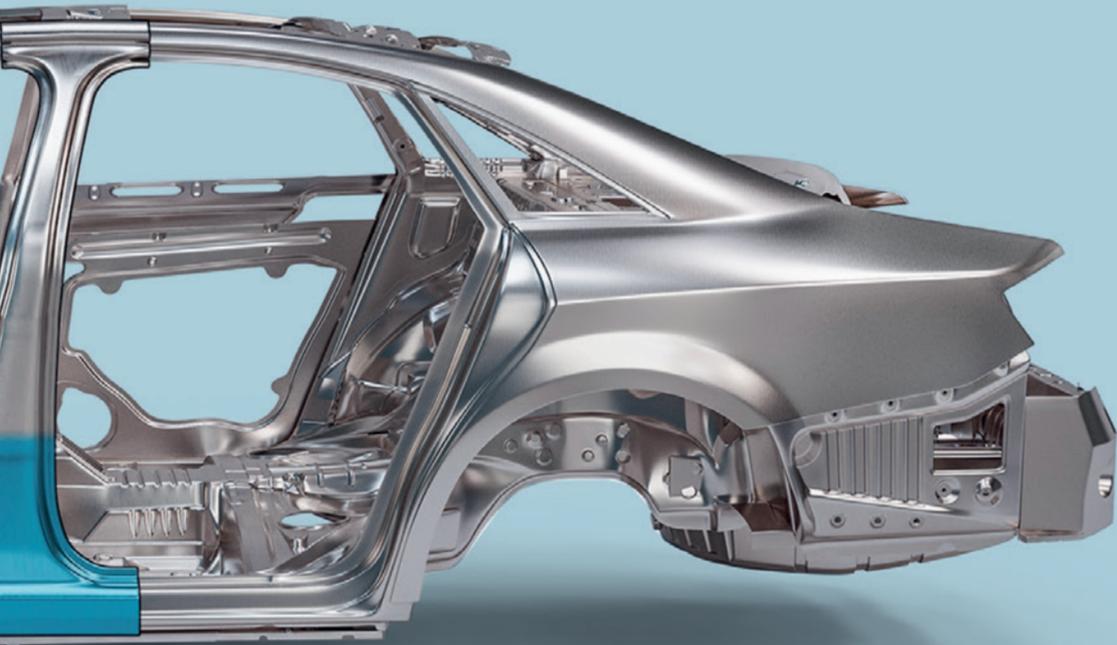
TYPICAL CHEMICAL COMPOSITION %

| Alloying element | C | Si | Mn | Cr | Mo | V |
|------------------|------|------|------|------|------|------|
| Skolvar | 0.70 | 0.20 | 0.45 | 5.00 | 2.25 | 1.60 |

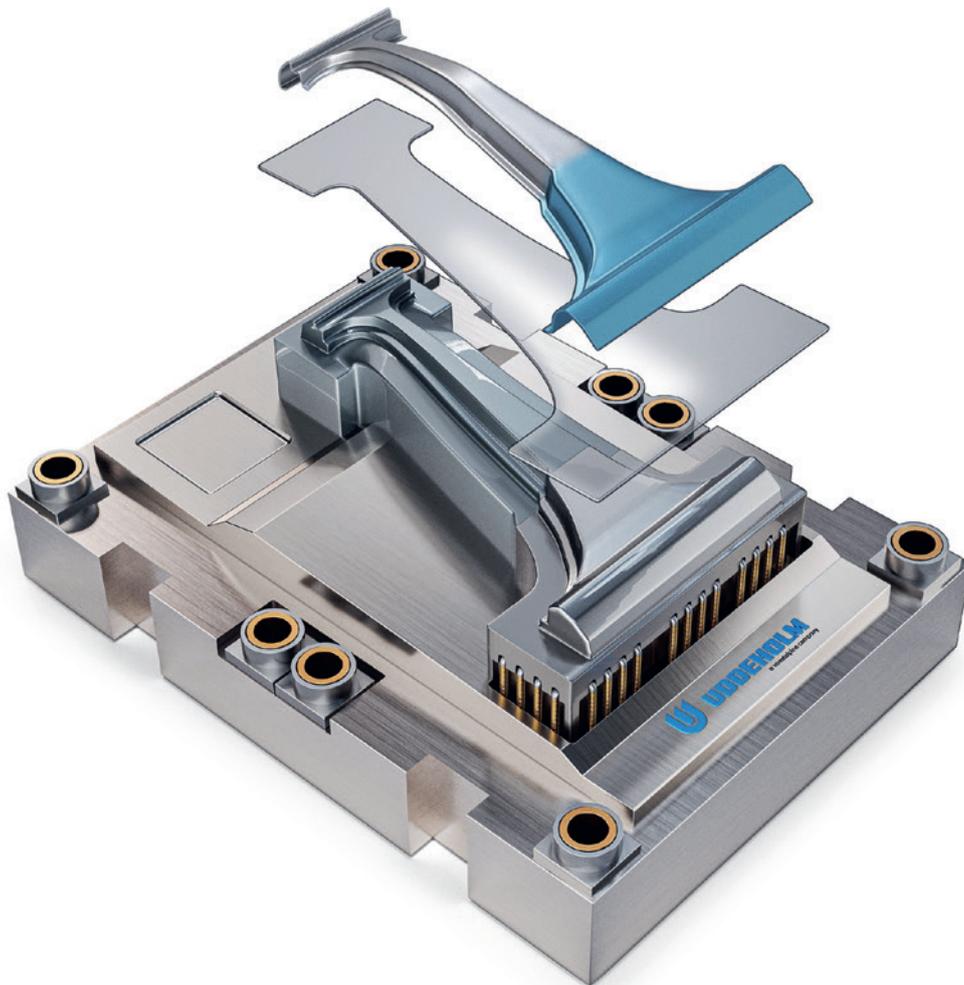
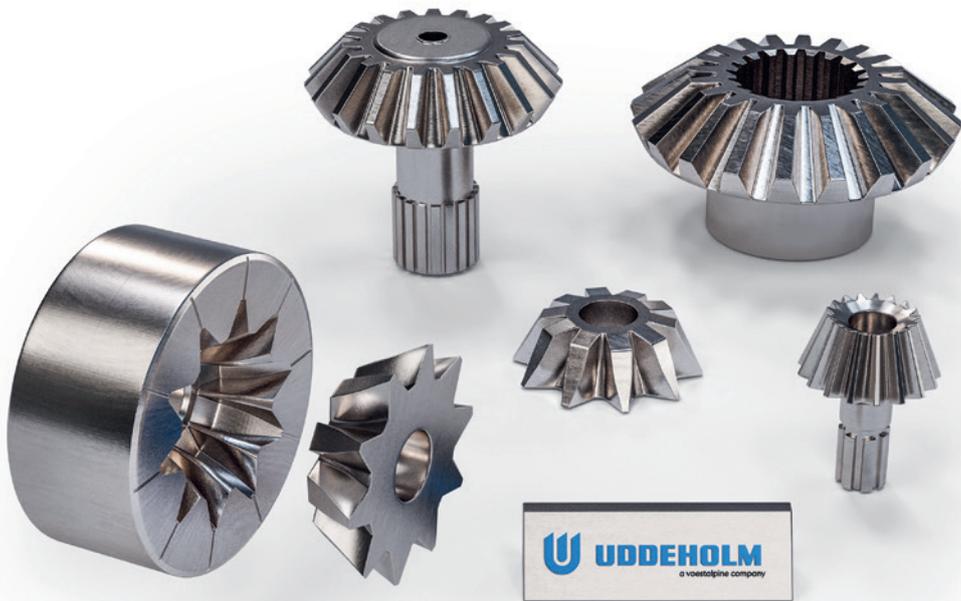
Next step in high-performance tool steel

The benefits of using Skolvar in hot forming applications, including forging, press hardening, and more. It is recommended that you take the following four steps:

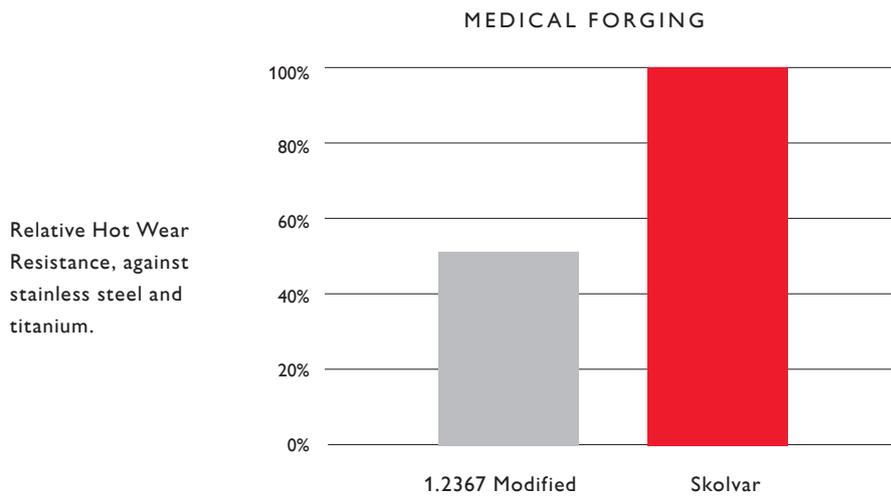
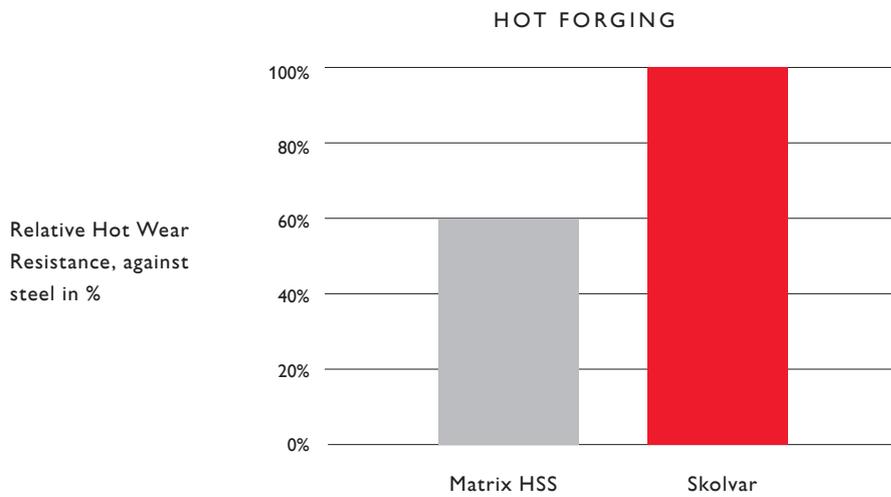
1. Identify your specific project needs and material requirements for your applications.
2. Consider the key benefits of Skolvar, including:
 - Superior Strength and Durability
 - Excellent Wear and Heat Resistance
 - Consistent Quality and Performance through ESR
 - A wide range of Sizes available for your need



| | Skolvar | AISI H11/H13 Types of alloys | AISI D2 Types of alloys |
|------------------------|---------|---------------------------------|----------------------------|
| Hot Wear Resistance | ● | ◐ | ◑ |
| Temper Back Resistance | ● | ◐ | ◑ |
| Hot Strength | ● | ◐ | ◑ |
| Cracking Resistance | ◑ | ● | ◐ |
| Weldability | ● | ● | ◑ |



3. Take into account the impact of hot forming process parameters on die wear and choose the right material to ensure it continues to function properly and produce high-quality parts, which can help minimize waste and reduce production costs.



4. Follow proper die maintenance procedures to ensure the longevity and effectiveness of the Skolvar material in your application.

Longer production runs and higher quality end products, supports your ongoing sustainability efforts. This is thanks to the high quality and dimensional stability of the end products, which simply means fewer discarded end products, resulting in a higher return on investment.



Why ASSAB?

ENABLING YOUR COMPETITIVENESS

More and more tool users are choosing the exclusive range of ASSAB tool steel. How do we do it? By putting your business needs first. We are the only tool steel supplier with dedicated international tool steel researchers, metallurgists, and product development teams.

ASSAB provides you with proven and exclusive tool steel that increases your competitiveness in the markets in which you operate. You can also enjoy customised sales and support services worldwide.

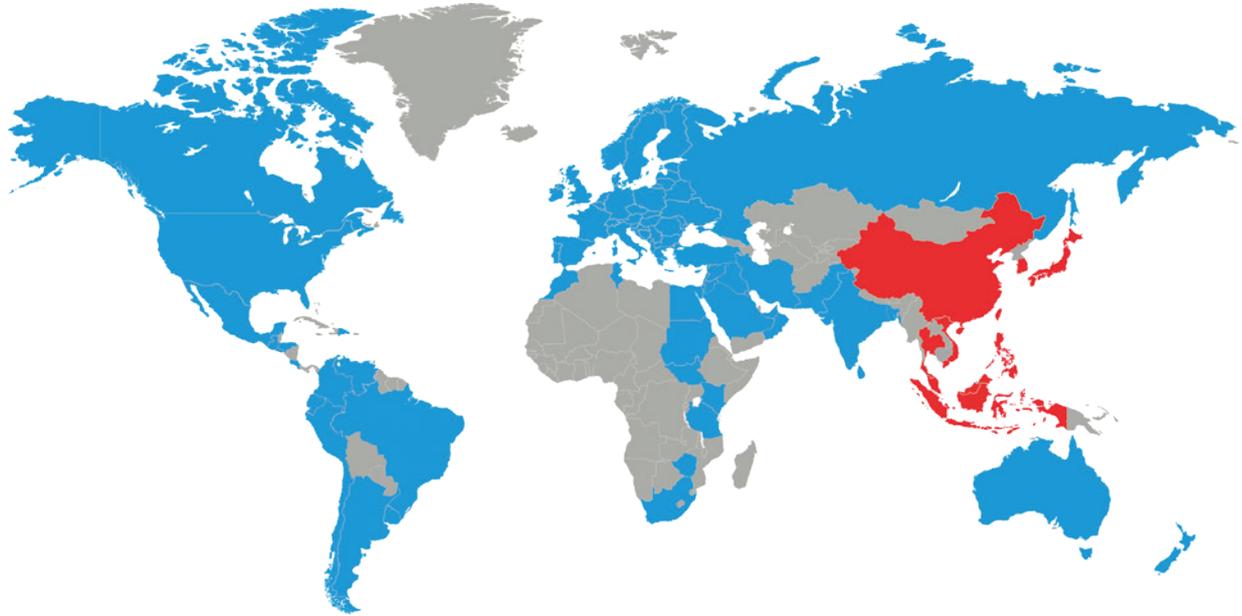


ASSAB

SUPERIOR TOOLING SOLUTIONS

A ONE-STOP SHOP

ASSAB is unmatched as a one-stop product and service provider that offers superior tooling solutions. In addition to the supply of tool steel and other special steel, our range of comprehensive value-added services, such as machining, heat treatment and coating services, span the entire supply chain to ensure convenience, accountability and optimal usage of steel for customers. We are committed to achieving solutions for our customers, with a constant eye on time-to-market and total tooling economy.



Choosing the right steel is of vital importance. ASSAB engineers and metallurgists are always ready to assist you in your choice of the optimum steel grade and the most suitable treatment for each application. ASSAB not only supplies steel products with superior quality, but we also offer state-of-the-art machining, heat treatment, surface treatment services and additive manufacturing (3D printing) to enhance your tooling performance while meeting your requirements in the shortest lead time. Using a holistic approach as a one-stop solution provider, we are more than just another tool steel supplier.

In Asia Pacific, ASSAB anchors the distribution network for Uddeholm, a Swedish tool steel manufacturer with more than 350 years of experience in the tool steel industry. The two companies together service leading multinational companies (MNCs) in more than 90 countries.

For more information, please visit
www.assab.com

