Maximise your advantage

ASSAB TOOL STEEL FOR HOT STAMPING

ASSAB

ASSAB tool steel for hot stamping - making the most of your advantage

Advanced, high-strength steel has become a staple of the modern automotive industry. Environmental requirements as well as higher safety standards make it a key solution for manufacturers aiming for the winning combination of reduced weight and higher strength.

Until recently, cold forming was the dominating method for forming critical structural components in high-strength steel. Cold forming has recently been supplemented by the new, game-changing method, hot stamping, which places new demands on the tool steel used in the process.

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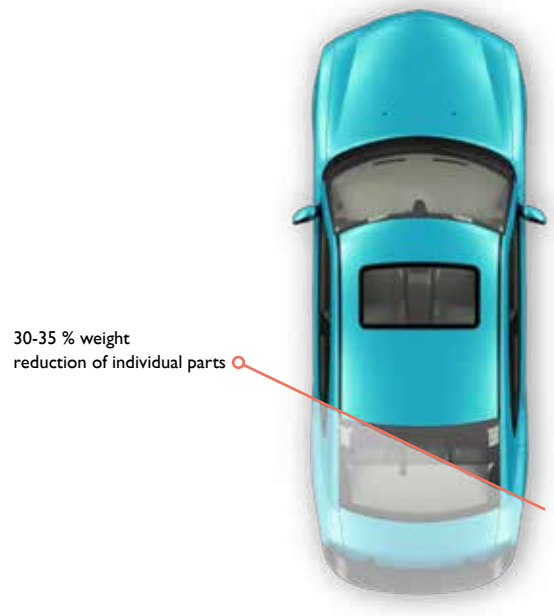
HOT STAMPING: BENEFITS AND CHALLENGES

Hot stamping has rapidly become a complement to cold forming in the automotive industry – and no wonder. By using a heated blank that forms and hardens quickly in the die, parts can be made larger, stronger and more complex than ever before. This means fewer structural parts per vehicle, to the tune of 30–35 % weight reduction of individual parts!

Naturally, this places severe demands on the tool steel used in the dies. For instance, to function reliably at the temperatures involved the tool steel needs to have excellent thermal conductivity and hot yield strength as well as high toughness and ductility.

With steel from ASSAB, it is possible to avoid common problems and go straight for longer, more predictable production runs and reduced cycle times.



Tooling solutions for new techniques

ASSAB is continually working with key industrial partners to bring to the market tooling solutions for advanced high strength steel, as we have done for over a decade. Thanks to our long experience we can advise you when it comes to choosing the right tool steel for hot stamping.

PREDICTABLE TOOL PERFORMANCE, LONGER PRODUCTION RUNS

The high demands placed on the tool steel in hot stamping bring an increased risk of premature tool failure, leading to unplanned production stops and delays. ASSAB tool steel for hot stamping will give you the benefit of predictable tool performance and longer production runs.

REDUCE YOUR CYCLE TIMES

An important aspect of hot stamping is cycle times. The dies used to form advanced high strength steel are heated up and must be allowed time to cool between pressings. ASSAB tool steel helps you increase productivity by reduced cycle time thanks to excellent thermal conductivity, high strength and toughness enabling strong internal cooling.

SUPERIOR END PRODUCT

By choosing tool steel with the right properties, you can improve the quality of your products. A high-end tool steel resists wear at elevated temperatures and provides improved dimensional tolerances and fewer scrapped parts due to tool scratches. Coupled with long production runs, this is one of the key advantages of choosing ASSAB tool steel.

Plasma or gas nitriding can be used on hot stamping tools to further increase hot wear resistance and reduce friction between the tool and sheet materials. Photo courtesy of AP&T Inc.

Coatings of PVD type, carried out after nitriding, improve the resistance to abrasive wear and galling.

BENEFIT FROM ASSAB'S EXPERIENCE

Together with Uddeholm, we maintain a global presence that guarantees you get the same high quality tool steel wherever you are. Along with excellent delivery service, technical support and additional services, you can be assured that choosing ASSAB tool steel will be beneficial in more ways than one.

IMPROVED TOTAL ECONOMY

In the automotive industry, the lowest cost per produced part often wins. Good quality tools pay off in the end as they ensure long and stable production runs. At ASSAB, we know that your total economy can be improved by upgrading your tool steel.

TOOL MANUFACTURE AND MAINTENANCE

The manufacturing and maintenance of tool steel are important aspects when choosing the right product for use in hot stamping. ASSAB provides excellent technical guidelines for machining and heat treatment, and we always offer welding electrodes in matching materials for ASSAB steel.

Choosing the right tool steel

QRO 90 SUPREME

QRO 90 Supreme is perfect when the surface of the tool is subjected to excessive heat. The highest thermal conductivity in the ASSAB hot stamping steel range combined with the highest resistance to wear at elevated temperature make this advanced hot work steel the number one choice for optimising cycle times in production.

UNIMAX

When excessive wear is experienced in the die, Unimax shows its true qualities. At a recommended hardness of 56 HRC Unimax resists abrasive wear, both hot and cold, and significantly increases the life of the hot stamping die.

DIEVAR

Dievar excels in almost all areas as a hot work tool steel. The unparalleled toughness and ductility decreases the risk of cracks in the die. This together with the high thermal conductivity and good hot strength makes this steel the ideal choice for your workhorse dies.

ASSAB 8407 SUPREME

ASSAB 8407 Supreme is a well-rounded steel that has proven itself as a great hot work tool steel for years. The combination of properties of the ASSAB 8407 Supreme makes this a solid choice for your tooling needs.

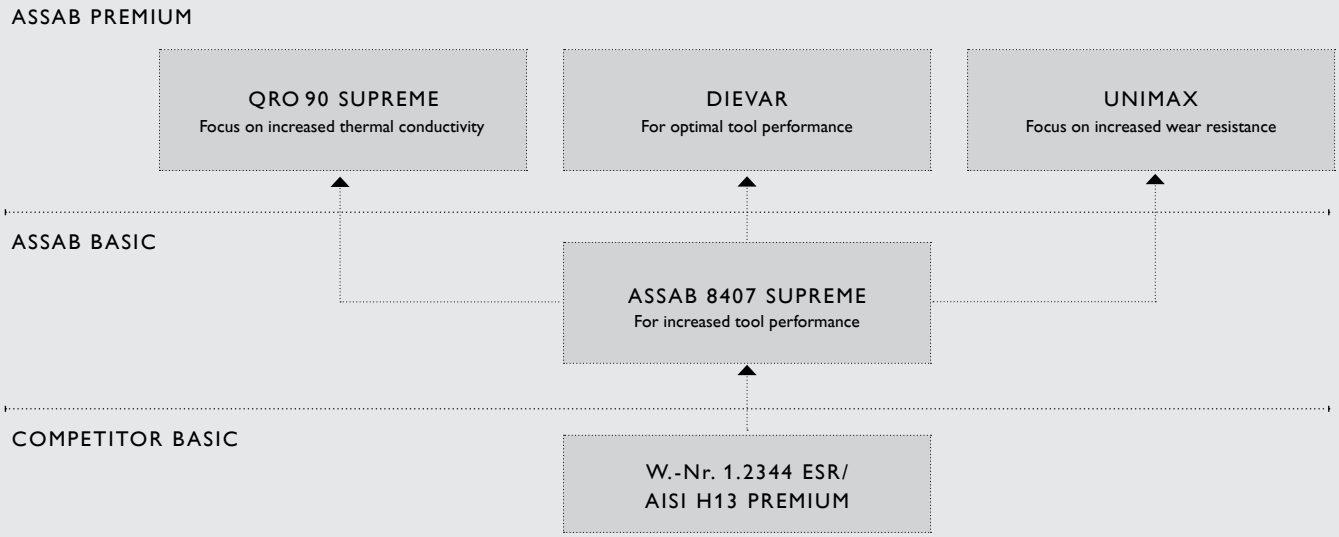
Tool steel grades perfectly suited for hot stamping

ASSAB supplies several tool steel grades perfectly suited for tools used in hot stamping. Hot stamping already means a great advantage over traditional production methods. By choosing the right tool steel you can maximise this advantage.

REQUIRED TOOL STEEL PROPERTIES

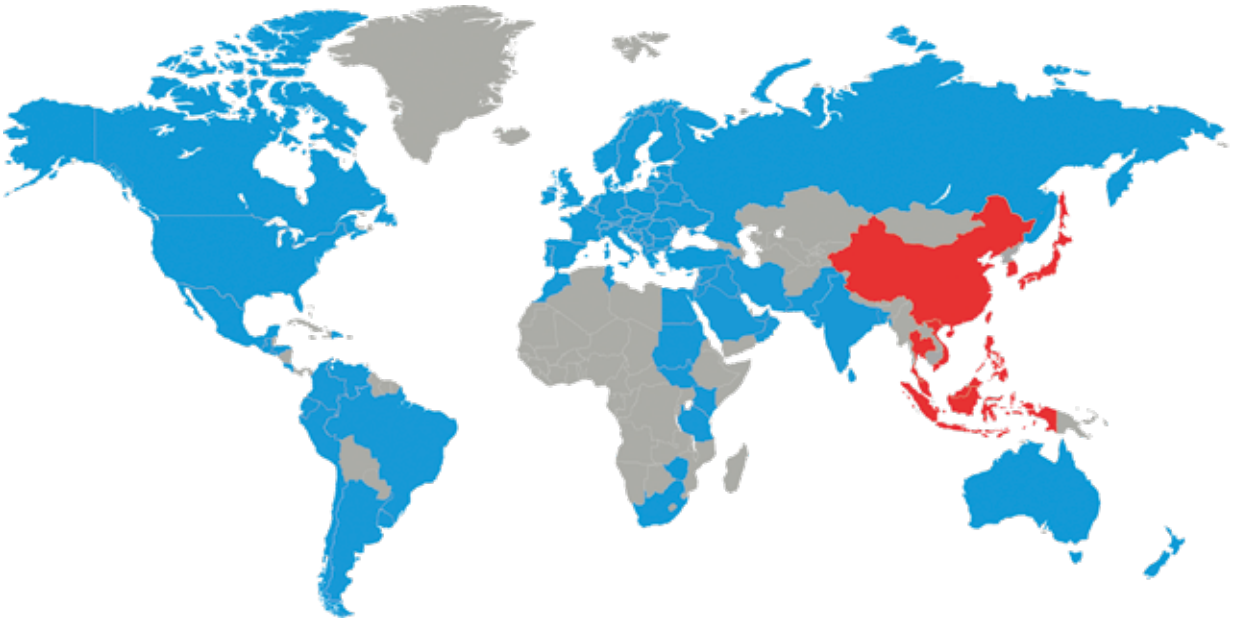
Hot stamping tool steel requires a particular set of properties in order to cope with the specific failure mechanisms involved in hot stamping.

PROPERTY	ENABLES
Good wear resistance at elevated temperatures	Abrasion resistance
Low friction	Adhesion resistance
Very good thermal conductivity	Reduced cycle times
Good ductility and toughness	Cracking resistance
Excellent machinability	Lower tool manufacturing costs
Good surface treatment properties	Adhesion, abrasion resistance



STEEL GRADES FOR TRIMMING DIES

ASSAB can provide suitable tool steel with excellent wear and chipping resistances for processes using mechanical trimming dies to smooth the edges of hot stamped parts.



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 best treatment for each application. ASSAB not only supplies steel products with superior quality, we offer state-of-the-art machining, heat treatment and surface treatment services to enhance steel properties to meet your requirement in the shortest lead time. Using a holistic approach as a one-stop solution provider, we are more than just another tool steel supplier.

ASSAB and Uddeholm are present on every continent. This ensures you that high quality tool steel and local support are available wherever you are. Together we secure our position as the world's leading supplier of tooling materials.

For more information, please visit
www.assab.com

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