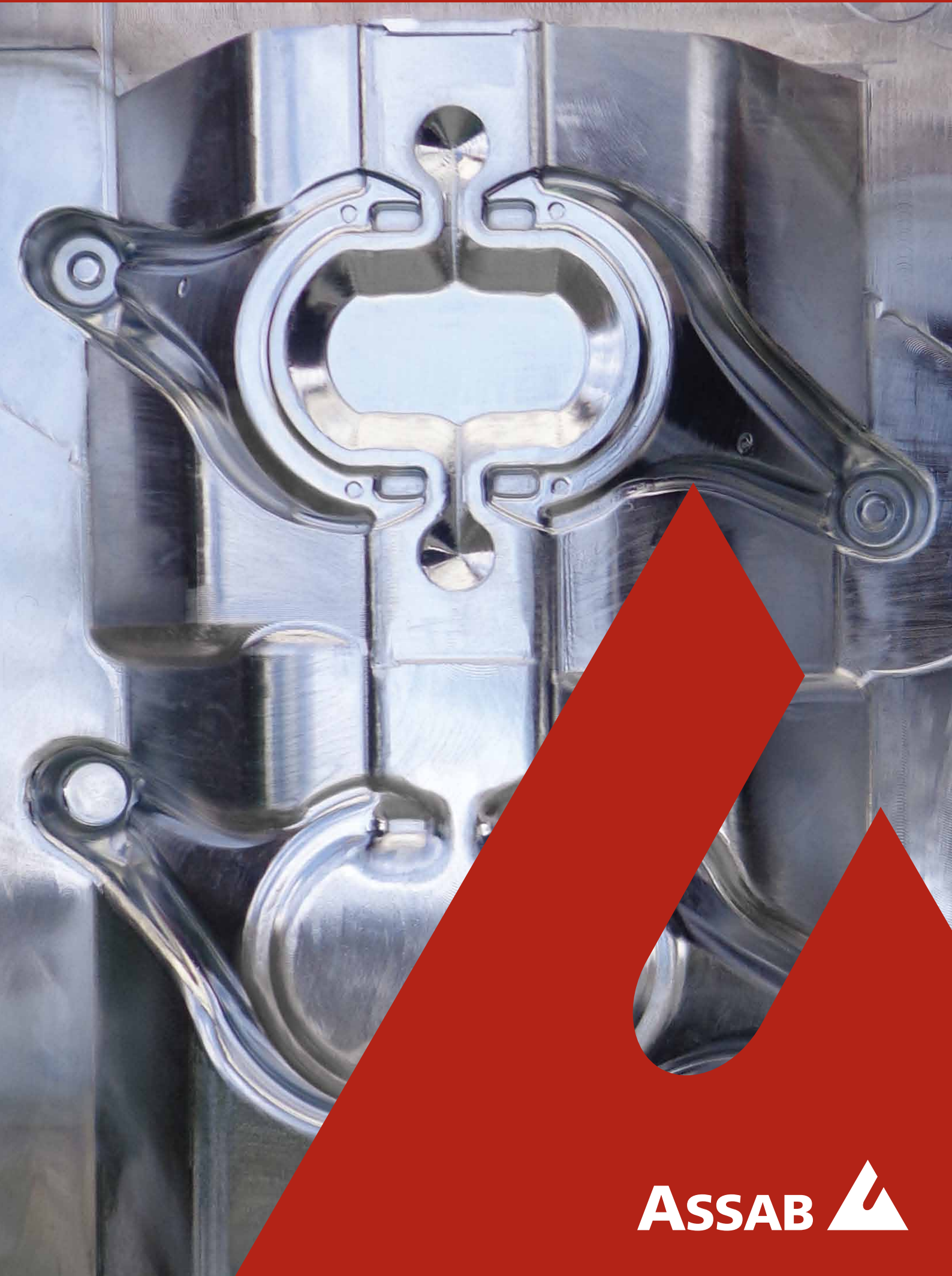


ASSAB 2714



ASSAB 

General

ASSAB 2714 is a vacuum-degassed Cr-Ni-Mo-V alloyed steel. It is supplied either in soft-annealed or prehardened condition. In the prehardened condition, no further heat treatment is required. This eliminates the risks, cost and waiting time of heat treatment and avoids the associated possibility of distortion or even cracking. Subsequent modifications can easily be carried out.

Typical analysis %	C 0.55	Si 0.3	Mn 0.8	Cr 1.2	Ni 1.6	Mo 0.5	V 0.1
Standard specification	WNr. 1.2714, DIN 55NiCrMoV7, JIS SKT 4						
Delivery condition	1. Soft-annealed to max. 250 HB 2. Hardened and tempered to either: 300 - 340 HB; 320 - 360 HB; 360 - 400 HB; 400 - 440 HB.						
Colour code	Black / White						

ASSAB 2714 is manufactured to high-quality standards by using special forging process with the following characteristics:

- Good toughness
- Good resistance to high thermal stresses
- Good dimensional stability during hardening
- Good through-hardening properties

Applications

- Hot forging tools
- Extrusion tools such as bolsters, mandrels, sleeves, die holders and backing plates
- Tools for hot shearing, hot forming and pressing

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as a warranty of specific properties of the products described or a warranty for fitness for a particular purpose.

Edition 130517

Properties

PHYSICAL PROPERTIES

Hardened and tempered to 370 HB (40 HRC).

Temperature	20°C	200°C	400°C
Density kg/m ³	7 800	7 740	7 680
Modulus of elasticity N/mm ²	215 000	202 000	185 000
Coefficient of thermal expansion per °C from 20°C	–	13.1 × 10 ⁻⁶	13.9 × 10 ⁻⁶
Thermal conductivity* W/m°C	36.0	36.5	36.8

* Thermal conductivity is very difficult to measure. The scatter can be as high as ±15%.

MECHANICAL PROPERTIES

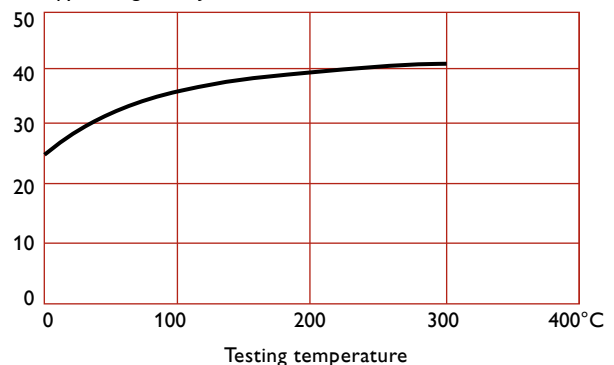
Hardened and tempered to 360-390 HB (39-42 HRC).

Temperature	20°C	200°C	400°C
Tensile strength, R _m N/mm ²	1210	1190	1030
Yield strength, R _{p0.2} N/mm ²	1150	1030	930

Toughness as a function of preheat temperature

Preheating is important for optimum toughness. 100°C is the recommended minimum preheat temperature.

Charpy-V toughness, J



Heat treatment

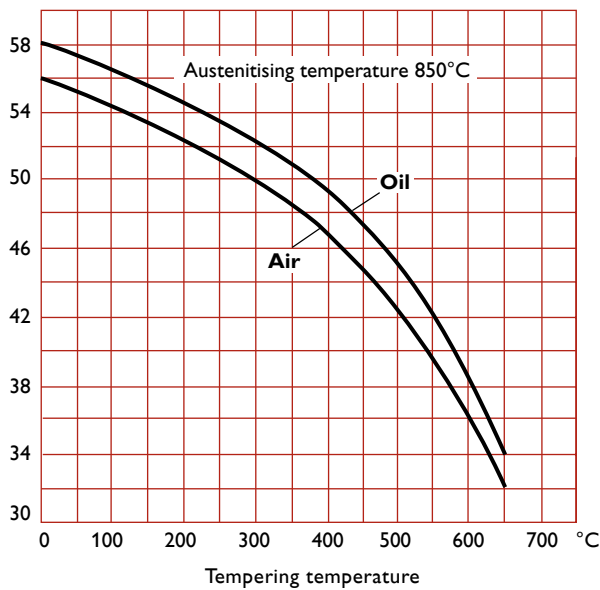
Process	Temperature	Soaking time [†]	Cooling	Hardness
Stress relieving / tempering ^{††}	~ 650°C (Soft-annealed) ~ 600°C (300 - 340 HB) ~ 580°C (320 - 360 HB) ~ 520°C (360 - 400 HB) ~ 430°C (400 - 440 HB)	120 min	Furnace cooling	–
Soft annealing	650 - 700°C	60 - 120 min	Slow cooling in furnace	–
Hardening	830 - 870°C	30 - 60 min	Oil	~ 58 HRC
	860 - 900°C	30 - 60 min	Air / Pressure N ₂	~ 56 HRC
Tempering	Refer to the tempering graph for the hardness.			

[†] Soaking time = Time at temperature after the tool is fully heated through.

^{††} Refer to oil tempering graph for stress tempering temperature.

Tempering graph

Hardness, HRC



Welding

Welding method	TIG	MMA (SMAW)
Working temperature	225 - 275°C	225 - 275°C
Filler material	UTP A 73 G4 ESAB OK TIG ROD 13.22	UTP 73 G4 ESAB OK 83.28
Hardness after welding	350 - 400 HB	340 - 390 HB
Post-weld treatment	Stress relieving for soft-annealed condition Stress tempering for prehardened condition	

Further information

For further information, i.e., steel selection, heat treatment, application and availability, please contact our ASSAB office* nearest to you.

*See back cover page.

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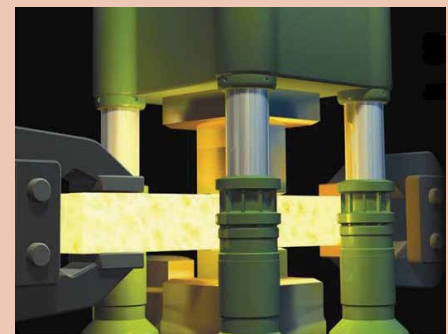
† Sales office only

ASSAB TOOL STEELS have been in Asia since 1945. Our customers associate ASSAB brand with tooling materials that are high in quality and consistency.

The ASSAB sales companies and distributors offer you well-assorted stocks in a number of places covering the Asia-Pacific region. To further shorten the lead time, ASSAB will mill, grind, drill and even wire-cut the tool steel to meet your requirements. ASSAB also provides state-of-the-art vacuum heat treatment services to enhance the steel properties.

Our engineers and metallurgists are always ready to assist you in your choice of the optimum steel grade and the best treatment for each application. We always carry out material examinations at our local mini laboratories and at the central laboratory in Sweden.

Our steel mill in Sweden, Uddeholms AB, is one of the few steelworks in the world that is dedicated to the manufacture of tool steels only. Uddeholms AB is certified to ISO 9001 and ISO 14001.



Our forging press is one of the most modern of its kind in the world.

Besides tool steels, the ASSAB products and business areas also include:

- Welding electrodes for repair welding of tools
- High-strength aluminium for tooling purposes
- Copper alloys (e.g., beryllium copper) for inserts in moulds
- Alloy machinery steels
- Cold-rolled strip steels for saws, compressor valves, coater blades, etc
- Component business (e.g., shafts and recycling knives)