ASSAB 2714

ASSAB

ASSAB	UDDEHOLM a voestalpine company	REFERENCE STANDARD		
		AISI	WNr.	JIS
ASSAB DF-3	ARNE	O1	1.2510	SKS 3
ASSAB XW-10	RIGOR	A2	1.2363	SKD 12
ASSAB XW-42	SVERKER 21	D2	1.2379	(SKD 11)
CALMAX / CARMO	CALMAX / CARMO		1.2358	
VIKING	VIKING / CHIPPER		(1.2631)	
CALDIE	CALDIE			
ASSAB 88	SLEIPNER			
ASSAB PM 23 SUPERCLEAN	VANADIS 23 SUPERCLEAN	(M3:2)	1.3395	(SKH 53)
ASSAB PM 30 SUPERCLEAN	VANADIS 30 SUPERCLEAN	(M3:2 + Co)	1.3294	SKH 40
ASSAB PM 60 SUPERCLEAN	VANADIS 60 SUPERCLEAN		(1.3292)	
VANADIS 4 EXTRA SUPERCLEAN	VANADIS 4 EXTRA SUPERCLEAN			
VANADIS 8 SUPERCLEAN	VANADIS 8 SUPERCLEAN			
VANCRON SUPERCLEAN	VANCRON SUPERCLEAN			
ELMAX SUPERCLEAN	ELMAX SUPERCLEAN			
VANAX SUPERCLEAN	VANAX SUPERCLEAN			
ASSAB 518		P20	1.2311	
ASSAB 618 T		(P20)	(1.2738)	
ASSAB 618 / 618 HH		(P20)	1.2738	
ASSAB 718 SUPREME / 718 HH	IMPAX SUPREME / IMPAX HH	(P20)	1.2738	
NIMAX / NIMAX ESR	NIMAX / NIMAX ESR			
VIDAR 1 ESR	VIDAR 1 ESR	H11	1.2343	SKD 6
UNIMAX	UNIMAX			
CORRAX	CORRAX			
ASSAB 2083		420	1.2083	SUS 420J2
STAVAX ESR	STAVAX ESR	(420)	(1.2083)	(SUS 420J2)
MIRRAX ESR	MIRRAX ESR	(420)		
MIRRAX 40	MIRRAX 40	(420)		
TYRAX ESR	TYRAX ESR			
POLMAX	POLMAX	(420)	(1.2083)	(SUS 420J2)
ROYALLOY	ROYALLOY	(420 F)		
COOLMOULD	COOLMOULD			
ASSAB 2714			1.2714	SKT 4
ASSAB 2344		H13	1.2344	SKD 61
ASSAB 8407 2M	ORVAR 2M	H13	1.2344	SKD 61
ASSAB 8407 SUPREME	ORVAR SUPREME	H13 Premium	1.2344	SKD 61
DIEVAR	DIEVAR			
QRO 90 SUPREME	QRO 90 SUPREME			
FORMVAR	FORMVAR			

( ) - modified grade

Edition 20210505

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.

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

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 55 NiCrMoV7, 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						

APPLICATIONS

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

PROPERTIES

PHYSICAL DATA

Hardened and tempered to 370 HB (40 HRC)

Temperature	20 °C	200 °C	200 °C
Density kg/m^3	7 800	7 740	7 680
Modulus of elasticity MPa	215 000	202 000	185 000
Coefficient of thermal expansion /°C from 20 °C	-	13.1 x 10^{-6}	13.9 x 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%.

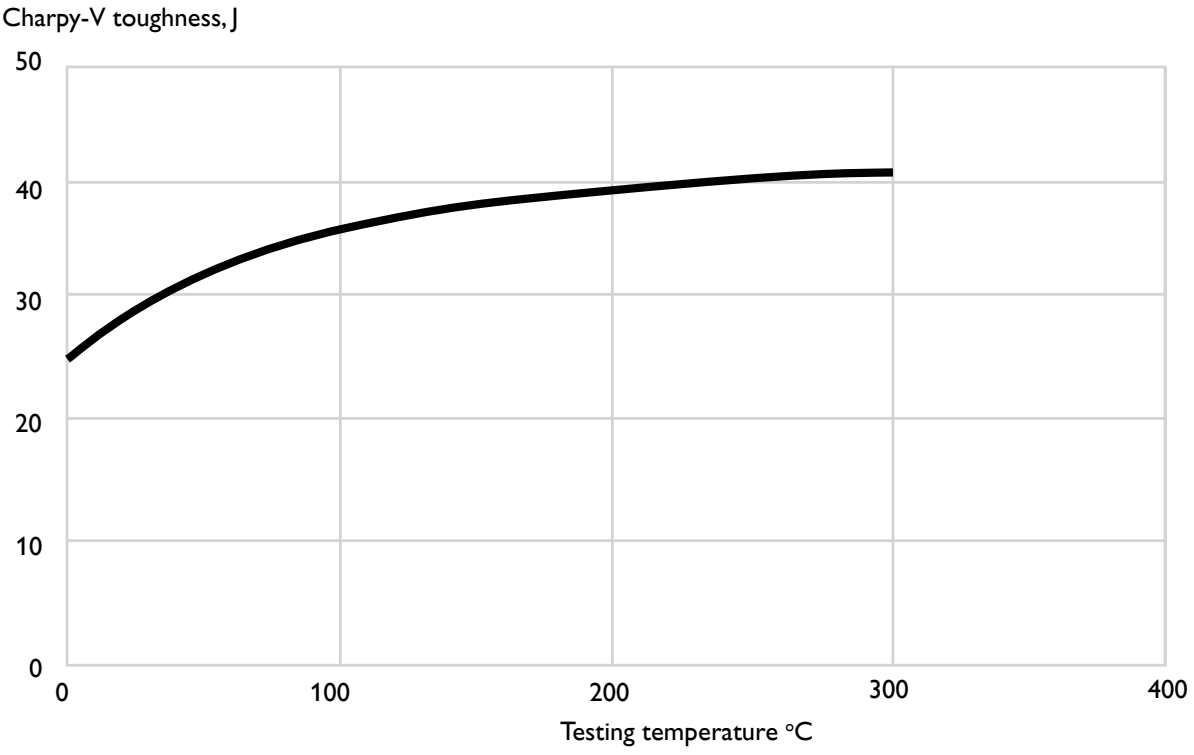
MECHANICAL PROPERTIES

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

Temperature	20 °C	200 °C	400 °C
Tensile strength, R_m N/mm^2	1 210	1 190	1 030
Yield strength, $R_{p0.2}$ N/mm^2	1 150	1 030	930

TOUGHNESS AS A FUNCTION OF PREHEAT TEMPERATURE

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



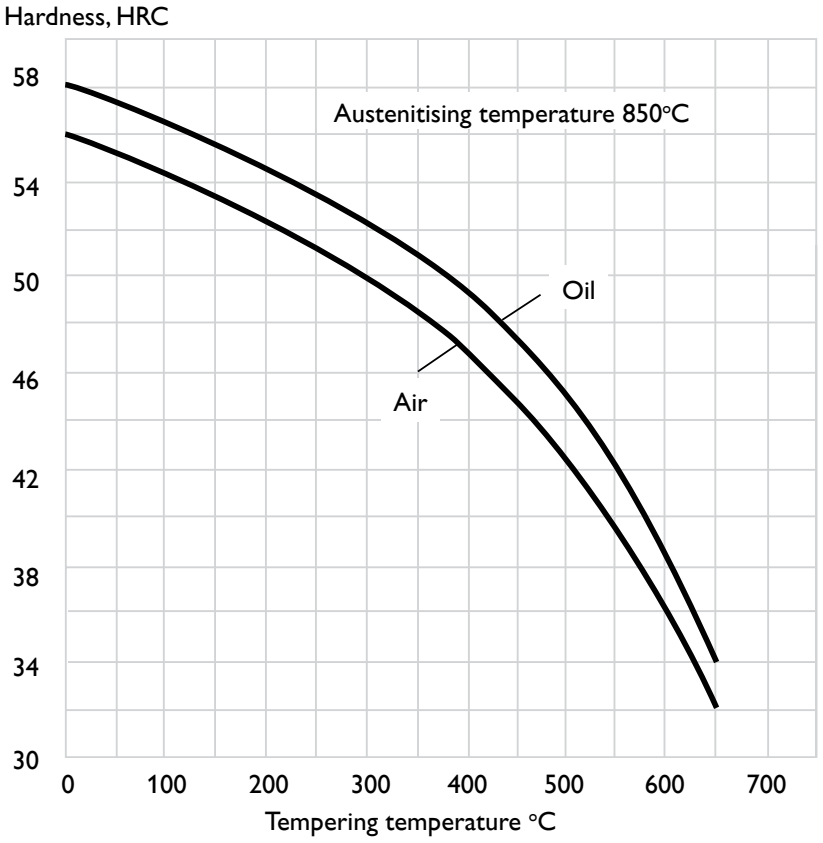
HEAT TREATMENT

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



WELDING

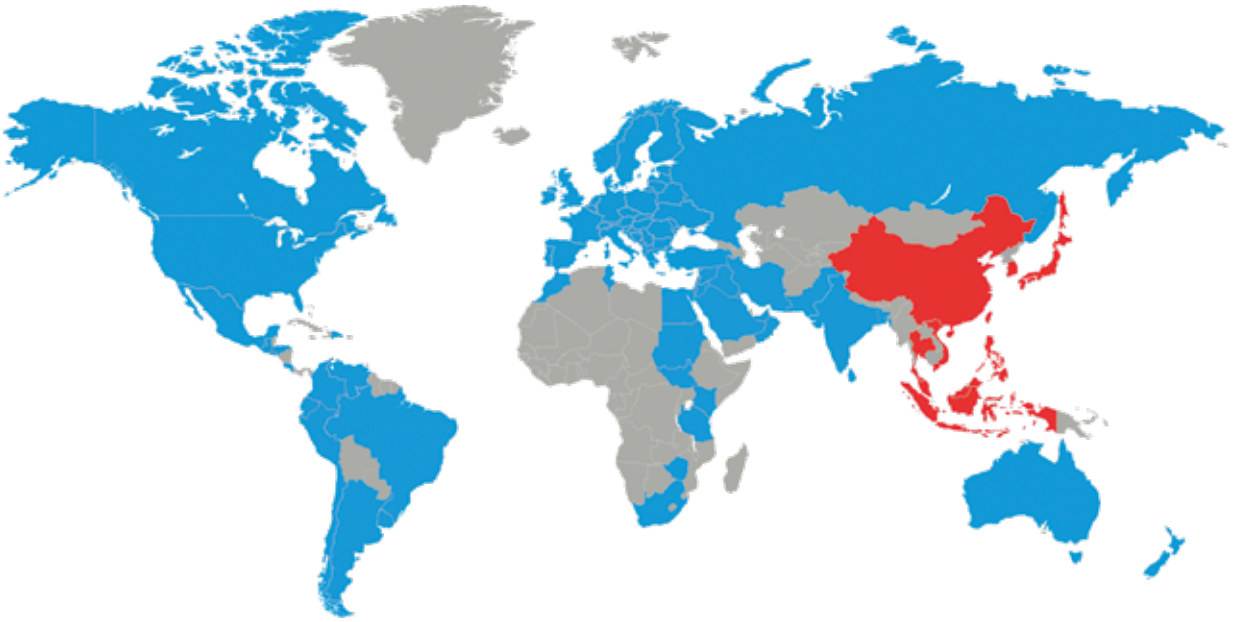
Welding method	TIG	MMA
Working temperature	225 - 275 °C	225 - 275 °C
Filler material	UTP A 73 G4 ESAB OK TIG ROD 13.22	UTP A 73 G4 ESAB OK 83.28
Hardness after welding	350 - 400 HB	340 - 390 HB
Post-weld treatment	Stress relieving for soft-annealed condition Stress tempering for prehardened condition	

FURTHER INFORMATION

Please contact your local ASSAB office for further information on the selection, heat treatment, application and availability of ASSAB tool steel.

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 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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