

# V820 Nitriding steel

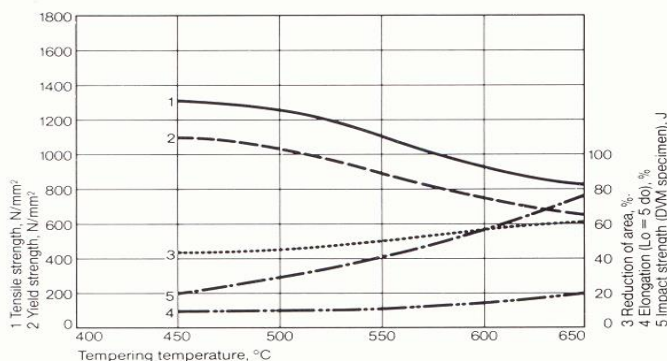
Typical Analysis (Ave. values %)	C	Si	Mn	Ni	Cr	Mo	Al		
	0.36	0.30	0.55	1.00	1.70	0.20	0.95		
NEAREST STANDARD	AS		W. No.		BS		AISI		
	-		1.8550		-		-		

<b>DESCRIPTION</b>	Chromium, Nickel, Aluminium steel for applications requiring very high surface hardness and wear resistance, in particular in large cross sections, in the hardened and tempered condition.
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<b>APPLICATIONS</b>	Cam discs, Cams, Pinion shafts, Measuring tools. Injection pump parts, Valve spools and Gudgeon pins.
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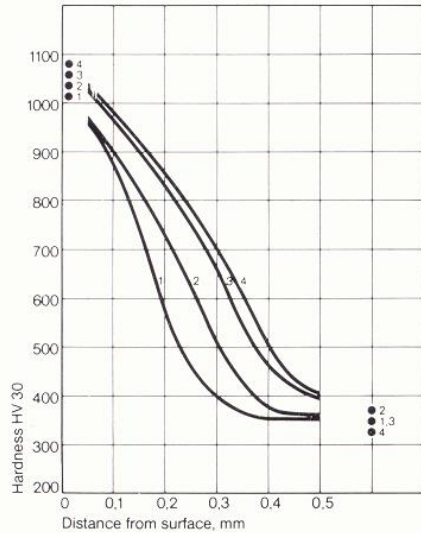
<b>HEAT TREATMENT</b>	Forge	850-1050°C, slow furnace cool.
	Normalize	870-900°C air cool.
	Anneal	650-700°C slow cool in controlled furnace.
	Stress relieve	In the hardened and tempered condition, approx. 30-50°C below tempering temperature. In the annealed condition 550-600°C 1 hour min. at temperature, air cool.
	Harden	850-900°C oil quench.
	Temper	580-660°C air cool (refer to Harden and temper graph.)
	Nitride	Gas, 510°C Salt, 570°C Surface hardness after nitriding, approx. 950 VH.

## Harden and Temper graph



Hardening temperature: 870°C  
Quenched and tempered  
Specimen size: 60 mm diameter

**Hardness after gas nitriding**



Nitriding temperature: 510°C  
 Nitriding time:  
 curve 1 40 hrs  
 curve 2 60 hrs  
 curve 3 85 hrs  
 curve 4 100 hrs

MECHANICAL PROPERTIES	Diameter		Tensile Strength MPa	Yield Strength MPa	Elong %	Impact Strength J
	Over	Up to				
	70	250				

PHYSICAL PROPERTIES	Density (kg/dm <sup>3</sup> )	7.85				
	Modulus of elasticity 10 <sup>3</sup> N/mm <sup>2</sup>	210				
	Thermal conductivity W/(m.K)	35				
	Electric resistivity Ohm.mm <sup>2</sup> /m	0.31				
	Specific heat capacity J/(kg.K)	460				
	Modulus of elasticity 10 <sup>3</sup> N/mm <sup>2</sup>	100°C	200°C	300°C	400°C	500°C
	Thermal expansion 10 <sup>6</sup> m/(m.K)	100°C	200°C	300°C	400°C	500°C
	205	195	185	175	165	
	11.1	12.1	12.9	13.5	13.9	

<b>WELDING</b>	Limited to minor repair work, please consult our welding engineers.
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<b>SIZE RANGE</b>	Round	30-190 mm
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# voestalpine High Performance Metals (Australia) Pty Ltd

## Notes

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