

Material Technical Data Sheet

WixSteel Industrial – SAE 8620

Material No.:	Former brand name:	International steel grades:
1.6523/1.6525	20NiCrMo2	BS: 805 H 20 AFNOR: 20 NCD 2 GB: 20NiCrMo2

Related Specifications: SAE 8620H complies with AS1444 Grade 8620H and/or ASTM A29 Grade 8620. Alternatively SAE 8620H can be supplied as GB grade 20NiCrMo2 (Material Number 1.6523/1.6526 under EN 10084).

Chemical Composition: (Typical analysis in %)	C	Si	Mn	S	P	Cr	Ni	Mo
	0.18~ 0.23	0.15~ 0.35	0.70~ 0.90	≤0.03 5	≤0.03 5	0.40~ 0.60	0.15~ 0.25	0.15~ 0.25

Application: Small diameter gear parts exposed to low-medium stress. Typical components include gears, planet wheels, drive pinions, shafts.

Hot forming and heat treatment:	Treatment	Temperature Range(° C)	Cooling
	Carburing	880-960	Oil (water), hot quench 160-250° C, Salt bath 580-650° C, Case hardening box, Air*
	Intermediate Annealing	630-650	Air, Furnace
	Core Hardening	860-900	Oil (water), hot quench 160-250° C*
	Case Hardening	780-820	Oil (water), hot quench 160-250° C*
	Tempering	150-200	Air

* the choice of cooling medium depends on the desired final properties and geometry of the section to be case hardened and the effect of the cooling medium, given the hardenability of the steel.

Welding: Pre-heat welding area to 250-450°C and maintain this temperature while welding with a low hydrogen electrode. Cool at a maximum rate of 100°C per hour. Weld before carburing.

**Case Hardening
Steel Bar 8620H:**

After final machining, heat in carburising atmosphere (blank carburise) to 880 to 960°C and hold for sufficient time at temperature to produce the required case depth. The time at temperature during the blank carburising process determines the depth of case achieved.

After completion of blank carburisation treatment, re-heat to 860-900°C, hold until uniform and then quench in oil as rapidly as practical.

A refining treatment is necessary to improve the structure of the case and its hardness. Heat slowly to 780-820°C, hold until uniform and then quench in oil.

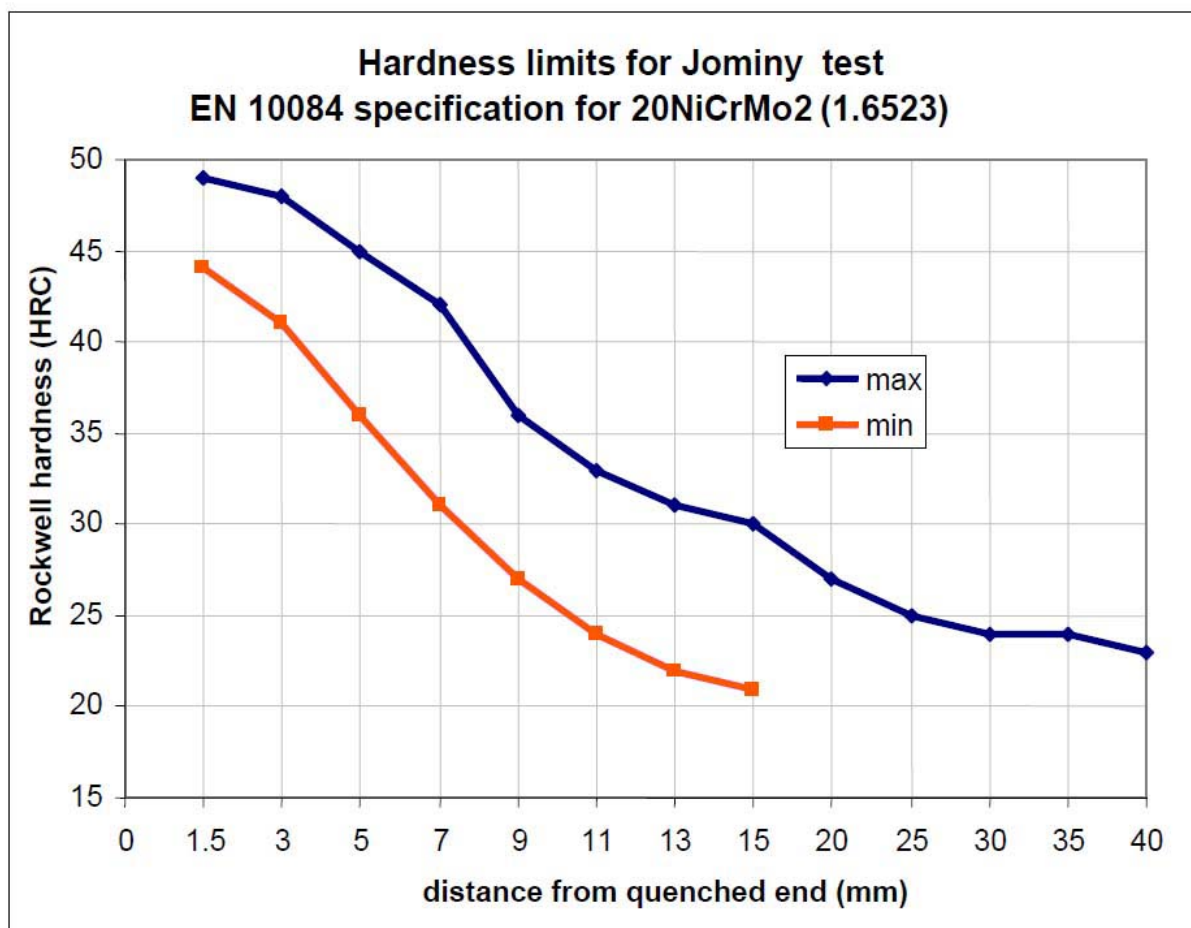
Single quench treatment may also be possible where components are quenched directly from 820 to 840°C.

Minimum tempering time is 1 hour, but a tempering period of 1 hour per 25mm of section is recommended. If the steel is to be direct hardened, in general, a carburising temperature of 950°C should not be exceeded. After case hardening a typical case hardness of 61 HRC can be achieved.

**Mechanical Properties
after Case Hardening:**

The following table shows the typical mechanical properties achievable in the core of a test section after carburizing, hardening and tempering.

Hardenability Diagram Curve(20NiCrMo2):



Hardenability Diagram Curve For SAE 8620H:

