



Heat treatment



Hardening is a way of making the knife steel harder and in the case of a martensitic steel also stainless. By first heating the knife steel to between 1050 and 1090°C (1922 and 1994°F) and then quickly cooling (quenching) it, the knife steel will become much harder, but also more brittle.

Since the blade is brittle a tempering at 220°C (400°F) for 2 hours is needed. For the small scale knife maker this can be performed in a an ordinary kitchen oven.

Damasteel can advice the following for our Martensitic steels.

	Hardening temperature	Tempering temperature	Tempering time	Hardness RWL 34	HRC PMC 27
1	1050 C (1920 F)	220 C (430 F)	2 h	59	53
2	1050 C (1920 F)	175 C (345 F)	2 h	62	54
3	1080 C (1975 F)	220 C (430 F)	2 h	58	56
4 *	1080 C (1975 F)	175 C (345 F)	2 h	63	58
5 *	1100 C (2010 F)	175 C (345 F)	2 h	63,5	60,5

* The treatments 4 and 5 include deep cooling -80°C (-140°F) after both hardening and tempering. Time 15 minutes.