Heat treatments of some cutlery steels

by *Denis Mura*

K720 (O2)

Quenching at 790° C
Tempering at 200°C for 90 minutes
Hardness: almost 62,5 HRc.

Or

Quenching 810°C cooling in olio
Tempering at 310°C
Hardness 57 HRc

C70 (1070)

Quenching 850°C (15 minutes) - Cooling in olio
Tempering at 200 °C for 90 minutes
Hardness 59 HRc

440 A e B

Quenching 1060/1070 °C (15 minutes) - Cooling at forced air
Tempering at 230°C for 90 minutes
Hardness: 58/59 HRc

440 C

Quenching 1070°C (20 - 25 minutes) - Cooling at forced air
Tempering at 200°C for 120 minutes
Hardness: 60 HRc

12C27

Quenching 1075 °C (15 minutes) - Cooling at forced air or oil
Tempering at 210°C for 90 minutes

MA5M (420)

Quenching 1050°C (20 - 25 minutes) - Cooling at forced air
Tempering at 230°C for 120 minutes
Hardness: 57 HRc

A2
Quenching at 970°C for 30min – air hardening cooling
First Tempering at 245°C for an hour then put the steel into freezer for 12 hours
and then make another tempering at 245°C for one hour (always reaches room temperature before each step).
Hardness: 59HRc (±1)

CPM 145
Quenching 1065°C (15 minutes) - air forced Cooling
Tempering at 235 °C for 60 minutes (better two tempering with subcooling)
Hardness: 59 HRc.

D2
Quenching 1030 °C (15 minutes) - air forced Cooling
Tempering at 150 -200 °C for 60 minutes
Hardness: 63 HRc

Or

Quenching 1030 °C (15 minutes) - air forced Cooling
Tempering at 250°C for hardness of 60 HRc
Tempering at 300°C for hardness of 58 HRc

Quenching 1070°C
Tempering at 200°C for hardness of 60 HRc
Tempering at 250°C for hardness of 58-59 HRc
We suggest to make subcooling

If you decide to use the lowest tempering temperatures, to which there is no secondary hardening, by carrying out the quenching at 1030 ° C it will obtain, for the same hardness, a better edge retention but a lower resistance to oxidation, whereas with a quenching at 1070 ° C will result in a lower edge retention, but greater resistance to oxidation.

ATS 34 e RWL 34
Quenching 1070 °C (20 - 25 minutes) - air forced Cooling
Tempering at 530 °C for 90 minutes
Hardness: 61 HRc

Damasco inox
Quenching 1050 ° (20 - 25 minutes) - air forced Cooling
Tempering at 230 °C for 90 minutes
Hardness: 58/60 HRc

K100
Quenching 950 °C (15 minutes) - air forced cooling or water or oil
Tempering at 150/200 °C for 90 minutes
Hardness: 63 hrc

Niolox
Quenching 1050 °C for 15 min – hot oil quenching bath
Tempering at 200 °C for 2 hours

W1
Quenching790 °C – water quenching bath
Tempering 200 °C

Becut
Quenching1070 °C – air cooling
Double tempering at 430 °C

1095
Quenching 800 °C (20 - 25 minutes) - oil quenching bath
Tempering at 250 °C for 120 minutes
Hardness: 58 HRc

Sleipner
Quenching 1043 °C 25 minutes - air forced Cooling
Tempering at 538 °C for 2 hours and air cooling
Hardness: 62 HRc

Or

Tempering at 555 °C for 2 hours for hardness of 58 HRc

UNIMAX
Preheat at 650° for 15 minutes, then at 850° for 15 minutes.
Quenching at 1025° for 25 minutes. - air forced cooling
Double tempering at 530°C for 2 hours