# QUICK REFERENCE GUIDE FOR HEAT TREATING

| | Annealing | Simple HT instructions | Pros and Cons | Hamon | Forging Temp |
|---|---|---|---|---|---|
| **Designer Steels** | | | | | |
| **Sandvik 12C27 Stainless** | | 30 mins. At 1975° plate quench, cryo | Well rounded knife steel | | |
| **Alloy: : C .60 Mn .40 Si .40 Cr 13.50** | | cryo after quench before temper | | | |
| **Sandvik 12C27M Stainless** | | 30 mins. At 1975° plate quench, cryo | Dishwasher safe | | |
| **Alloy: : C .52 Mn .60 Si .40 Cr 14.50** | | cryo after quench before temper | Designed for kitchen knives | | |
| **Sandvik 13C26 Stainless** | | 6-12 mins. At 1995° plate quench, cryo | Razor edge sharpness | | |
| **Alloy: : C .68 Mn .60 Si .40 Cr 13.00** | | cryo after quench before temper | | | |
| **Sandvik 19C27 Stainless** | | 5-12 mins. At 2010° plate quench, cryo | Excellent Wear Resistance | | |
| **Alloy: : C .95 Mn .65 Si .40 Cr 13.50** | | cryo after quench before temper | | | |
| **Hitachi ATS-34 Stainless** | | 15 mins. at 1900° plate quench cryo | | no | |
| **Alloy: : C 1.00 Mn .40 Si .25 Cr 13.75 Mo 3.5** | | cryo after quench before temper | | | |
| **440C Stainless** | 1650° six hours | 15 mins. at 1900° plate quench | | | 1950° - 2150° |
| **Alloy: : C 1.00 Mn 1.00 Si 1.00 Cr 16-18 Mo .75 P .40** | Slow Cool | | | | |
| **CPM 154 Stainless** | 1650° two hours, slow cool | 30-60 mins. At 1950° plate quench | CPM version of 154CM | no | |
| **Alloy: : C 1.05 Cr 14.00 Mo 4.00** | to 1200° then air cool | cryo after quench before temper | | | |
| **CPM S30V Stainless** | | 60 mins at 1950° plate quench | very difficult to get a mirror finish | no | 2100° |
| **Alloy: : C 1.45 Mn .40 Si .40 Cr 14.00 Va 4.00 Mo 2.00** | | cryo after quench before temper | | | |
| **CPM S35VN Stainless** | 1650° two hours | 30 mins at 1950° plate quench | Highly improved version of S30V | no | 2100° |
| **Alloy: : C 1.4 Cr 14.00 V 3.00 Mo 2.00 Nb .5** | slow cool | cryo after quench before temper | | | |
| **154CM Stainless** | 1650° two hours | 60 mins. At 1950° plate quench | Good mirror finish | no | |
| **Alloy: : C 1.05 Mn .50 Si .30 Cr 14.00 Mo 2.00** | slow cool | Cryo after quench, before temper | | | |
| **CPM 3V** | 1650° two hours | 30-45 mins. at 1950° plate quench | Extremely tough | no | |
| **Alloy: : C .80 Cr 7.5 Mo 1.3 V 2.75** | slow cool | Temper 3x at 1000° | | | |
| **CPM S90V Stainless** | 1650° two hours | 20 mins. At 2150° plate quench | very difficult to grind | no | |
| **Alloy: : C 2.3 Cr 14 Mo 1 V 9** | slow cool | | | | |
| **CPM S110V Stainless** | 1650° two hours | 20 mins. At 2150° plate quench | Not readily available | no | |
| **Alloy: : C 2.8 Co 2.5 Cr 15.25 Mo 2.25 Nb 3.00 V 9.00** | slow cool | temper 3x | | | |
| **Tool Steels** | | | | | |
| **D-2 Tool Steel** | 1600° 2 hrs. slow | 30 minutes at 1850° Air or plate quench | | no | 1850° - 2000° |
| **Alloy: : C 1.55 Cr 11.50 V .80 Mo .90** | cool to 1000° then air cool | | | | |
| **O-1 Tool Steel** | 1400° - 1450° slow cool | 15 mins at 1450°-1500° Oil Quench | | no | 1825-1925° F |
| **Alloy: : C .95 Mn 1.00 Si .25 Cr .50 V .25 Tungsten .6** | | | | | |
| **AISI Type A2 Tool Steel** | 1550°-1600° slow cool | 30 mins. At 1750° - 1800° | | | 1850° - 2000° |
| **Alloy: C 1.00 Cr 5.13 Mn <1.00 Mo 1.15 V .33 Si <.50** | | Cryo after quench, before temper | | | |
| **Alloys & Others** | | | | | |
| **L6** | complicated | 10-30 mins 1500°-1550° Oil Quench | L6 Bainite Katana!!! | no | 2000° - 1550° |
| **Alloy: C .70 Cr .70 Mn .60 Ni 1.40 Si .25** | | | | | |
| **15 N 20** | 1450° slow cool | 5 mins 1500°-1550° Oil Quench | Resists FeCl etch, very tough | no | |
| **Alloy: : C .75 Mn .75 Si .25 Ni 1.5** | | | | | |
| **52100** | 1460° air cool 1275° hold | 5 mins. 1475° - 1550° Oil Quench | high carbon > 1% | yes | 2100° - 1700° |
| **Alloy: : C 1.02 Mn .36 Si .25 Cr 1.46** | for 16 hours | | | | |
| **Spring Steels** | | | | | |
| **HR 1075/1080** | 1500° slow cool | 5 mins. At 1450° Oil Quench | | no | 2150° |
| **Alloy: : C .70/.88 Mn .40/.90** | | | | | |
| **HR 1084** | 1500° slow cool | 5 mins. At 1500 Oil Quench | | no | 2150° |
| | | | | | |
| **HR 1095** | | 5-10 minutes at 1525° | | yes | 2150° |
| **Alloy: : C .90/1.04 Mn .60/.90** | | | | | |
| **HR 5160** | 1525° air cool to 1250° hold | 5 mins. At 1525° Oil Quench | | no | 2200° - 1600° |
| **Alloy: : C .60 Mn .85 P .035 max S .040 max** | for 6 hours | | | | |
| **W1** | 1400° 30 minutes slow cool | 5 mins at 1450° Water quench 175° | | yes | |
| **Alloy: C .70/1.30** | | | | | |

[Crucible Steel Database:](#)
[Sandvik Hardening Programs](#)
[Cashen Blades](#)
[Evenheat Heat Treat Guide](#)
[AJH Knives Steel Anaylsis Page](#)

Generic annealing according to Evenheat is 30 mins. At 1650° and leave in oven until cool with door closed

**This chart is a baseline only. Do your research before actually heat treating your knife.**

All temps given in °F
Nickel resists ferric chloride etching
Manganese blurs the hamon line
Quench oil should be around 120°