

A6 Tool Steel Heat Treatment

The chemistry, the hardening cycle and the tempering response of A6 air-hardening cold work steel, from the reference page on aobosteel.com. A reference summary of published practice and not an Aobo Steel specification.

Reference only. The chemistry, the hardening cycle and the tempering response are reproduced from the source named at the foot of this sheet. The figures are shop reference values rather than a specification, and the card carries no tolerances. Run a trial part before committing production work to this cycle.

Chemistry of A6

Source, heat treating reference information for A6, printed page 182.

Element	Percent
Carbon	0.70
Manganese	2.00
Silicon	0.30
Chromium	1.00
Molybdenum	1.30

The card prints one figure for each element rather than a specification range. Vanadium, tungsten, cobalt and sulfur appear on the card with no figure against them and are left out of the table rather than shown as a zero.

Hardening A6

Source, heat treating reference information for A6, printed page 182.

Step	A6
Preheat	1200 °F (650 °C)
Harden	1575 °F (855 °C)
Quench	Air quench

The card attaches no size condition to the preheat, so the step is not marked as one that only larger sections need. It prints one hardening temperature and one quench medium for the grade, with no oil or salt alternative alongside the air quench.

Tempering response of A6

Source, heat treating reference information for A6, printed page 182.

Temper, °F	°C	A6, HRC
As quenched	No temper	67
300	150	64
400	205	61
500	260	59
600	315	55

The card steps the tempering temperatures by 100 °F from 300 °F to 600 °F and prints one Rockwell C figure for each. The first row is the hardness as quenched, before any temper, and the card carries no row above 600 °F.

The card carries 0.70% carbon with 2.00% manganese, hardens at 1575 °F (855 °C) from a 1200 °F (650 °C) preheat into air, and steps the tempering line from 67 HRC as quenched to 64 HRC at 300 °F (150 °C) and 55 HRC at 600 °F (315 °C), with vanadium, tungsten, cobalt and sulfur left without a figure on the card.

Aobo Steel, tool steel supplier

Aobo Steel supplies tool steel to distributors and mold, tool and die shops, including D2, D3, O1, O2, A2, S7, H13, H11, M2, L6, P20 and 420 and 440C stainless. Forged or hot rolled, annealed or pre-hardened, cut to your sizes, with test certificates.

Reference data compiled from Heat Treatment, Selection, and Application of Tool Steels (William E. Bryson, second edition, Hanser). The chemistry, the hardening cycle and the tempering response for A6 come from the heat treating reference information on printed page 182.

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