

M2 High Speed Steel Specifications by Standard

The composition the American, British and German specifications allow for M2 high speed steel, with both ends of the British and German ranges and the carbon balance of the grade, from the reference page on aobosteel.com. A reference summary of published practice and not an Aobo Steel specification.

Reference only. The composition comparison and the carbon figures are reproduced from the source named at the foot of this sheet. The figures are a published reference rather than a specification of ours, and the sheet carries no tolerances. Check the figures against the material test certificate of the heat before a purchase is placed on them.

M2 type steels by specification

Source, composition comparison for M2 type high speed steels, printed page 97.

Specification	V	W	Mo	Cr	C	SCE variation from ideal value
M2	2	6	5	4	0.85	-0.26
M2 (high carbon)	2	6	5	4	1.105	0 (balanced)
BM2 (A)	2.05	6.75	5.5	4.5	0.8	-0.4
BM2 (B)	1.75	6.0	4.75	3.75	0.9	-0.13
S 6-5-2 (A)	2.0	6.7	5.2	4.5	0.86	-0.16
S 6-5-2 (B)	1.7	6.0	4.7	3.8	0.94	-0.08
SC 6-5-2 (A)	2.0	6.7	5.2	4.5	0.95	-0.07
SC 6-5-2 (B)	1.7	6.0	4.7	3.8	1.05	+0.03

All values are percent by weight, and the last column is carried in percentage points of carbon. The table prints two lines for each British and German specification, and the source explains them on the same page. Line A gives the upper limit for the carbide formers and the lower limit for carbon, line B gives the lower limit for the carbide formers and the upper limit for carbon. M2 comes from the AISI Production Manual, Tool Steels, 1981, BM2 from BS 4659, and S 6-5-2 and SC 6-5-2 from DIN 17 350. Composition data is for general reference only, actual values vary by standard, mill and heat number, so confirm the figures against the material test certificate of the heat or ask Aobo Steel.

The carbon balance of the grade

Source, composition comparison for M2 type high speed steels, printed page 97.

Carbide forming element	Carbon per 1 percent of the element
Tungsten	0.033
Molybdenum	0.063
Vanadium	0.176
Chromium	0.060

The same note prints the four factors used to work out how much carbon the carbide formers in a high speed steel will take up. The total for a given steel is its stoichiometric carbon equivalent, and the last column of the table above is that total less the carbon the specification itself allows, so a negative figure is a steel the specification permits to run short of the carbon its own carbide formers ask for.

M2 as the American specification allows it carries 0.85 percent carbon against a stoichiometric requirement of 1.13 percent, a deficiency of 0.28 percent. The British specification at its most adverse corner is 0.4 percent short and at its best corner 0.12 percent short. The balanced line in the table is the high carbon version of the grade at 1.105 percent carbon. The last column of the composition table is the same measure worked out on the lines printed in it, which is why it reads -0.26 for M2 rather than -0.28.

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 High Speed Steels (Geoffrey Hoyle, Butterworths, 1988). The composition comparison, both lines of the British and German specifications, the carbon factors and the worked carbon balance all come from printed page 97.

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