

PM High Speed Steel Grades and Their Chemical Composition

Chemical composition of the powder metallurgy high speed steel grades sold under the ASP, CPM, HAP and Chinese PM designations.

Reference only. This is a reference summary of published practice and not a specification of ours. All values are mass percent and nominal analysis varies by maker and by revision, so confirm the cast analysis on the mill certificate before use.

Grades and chemical composition

Chemical composition of PM high speed steel grades, mass percent

Grade	Country	C	Cr	Mo	W	Co	V	Nb
ASP2017	France	0.8	4.2	3	3	8	1	1
ASP2023	France	1.28	4.2	5	6.4	—	3.1	1
ASP2030	France	1.28	4.2	5	6.4	8.5	3.1	1
ASP2053	France	2.45	4.2	3.1	4.2	—	8	1
ASP2060	France	2.3	4.2	7	6.5	10.5	6.5	1
CPM M2	United States	0.9	4.2	5	6.4	—	2	—
CPM M42	United States	1.1	3.8	9.5	1.5	8	1.2	—
HAP10	Japan	1.3	4	6	3	—	4	—
HAP20	Japan	1.5	4	7	2	5	4	—
HAP40	Japan	1.3	4	5	6.5	8	3	—
HAP50	Japan	1.5	4	6	8	8	4.5	—
HAP70	Japan	1.9	4	10	12	12	4.5	—
HAP72	Japan	1.9	4	8	10	10	5	—
FT15	China	1.5	4	<1	12	5	5	—
FR71	China	1.2	4	5	10	12	2	—
GF1	China	0.85	4	—	18	—	1	—
GF2	China	1.1	4	5	6	—	2	—
GF3	China	1.5	4	5	10	9	3	—

Compiled from 刀具材料速查手册, Table 2-21, Domestic and foreign PM high speed steel grades and their chemical composition, printed page 33. Every figure was read from a rendered image of the printed page and checked row by row. It is a reference summary rather than an Aobo Steel specification.

CPM M2 and CPM M42 carry the analysis of the conventional M2 and M42 high speed steels, so the difference the buyer pays for is the carbide size rather than a different alloy. Cobalt appears at 8 to 12 percent in the grades used on high speed cutting and is empty in the grades sold for cold work and for plastic moulds.

Aobo Steel, tool steel supplier

Aobo Steel supplies tool steel to distributors and tool, die and mold shops, including D2, D3, O1, O2, A2, S7, H13, H11, H10, H21, M2, M35, M42, L6, P20, P20+Ni and 420 and 440C stainless. Forged or hot rolled, annealed or pre-hardened, cut to your sizes, with test certificates.

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