

Tool Steels

Alloy Type	Similar Destinations	Approx. Tempered Hardness	Distortion in Heat Testing	Toughness	Wear Resistance	Resistance to Softening at High Heat	Castability	Resistance to Hot Tearing	Shrinkage	Fluidity
A-2	ASTM A-597, GR. CA-2	R _C 55	Best	Fair to Poor	Good	Good	85	B	B	B
A-6	IC CA-6	R _C 55	Best	Fair to Poor	Good	Fair	80	B	B	B
D-2	ASTM A-597, GR. CD-2	R _C 60	Best	Poor	Very Good	Good	85	B	B	C
D-3	IC CD-3	R _C 60	Very Good	Poor	Very Good	Good	85	B	B	C
D-6	IC CD-6	R _C 61	Very Good	Poor	Very Good	Good	80	B	B	C
H-11	IC CH-11	R _C 52	Very Good	Poor	Fair	Good	80	B	B	B
H-13	ASTM A-597, GR. CH-13	R _C 50	Very Good	Fair	Fair	Good	85	B	B	B
L-6	IC CL-6	R _C 62	Good	Fair	Poor	Poor	80	B	B	B
M-2	ASTM A-597, GR. CM-2	R _C 63	Fair	Poor	Very Good	Very Good	80	C	B	B
M-4	IC CM-4	R _C 64	Fair	Poor	Best	Very Good	75	C	B	B
M-42	IC CM-42	R _C 68	Fair	Poor	Very Good	Best	75	B	B	B
O-1	ASTM A-597, GR. CO-1	R _C 60	Very Good	Fair to Poor	Fair	Poor	80	B	A	B
O-2	IC CO-2	R _C 60	Very Good	Fair to Poor	Fair	Poor	80	B	A	B
O-7	IC CO-7	R _C 62	Very Good	Fair to Poor	Fair	Poor	80	B	A	B
S-1	IC CS-1	R _C 50	Fair	Good	Poor	Fair	90	B	B	B
S-2	IC CS-2	R _C 56	Poor	Good	Poor	Poor	90	B	B	B
S-4	IC CS-4	R _C 56	Poor	Good	Poor	Poor	90	B	B	B
S-5	ASTM A-597, GR. CS-5	R _C 58	Fair	Good	Poor	Poor	90	B	B	B
S-7	ASTM A-597, GR. CS-7	R _C 58	Fair	Good	Poor	Poor	90	B	B	B
T-1	IC CT-1	R _C 63	Fair	Poor	Very Good	Very Good	85	C	A	B

Tool Steels

Carbon	Manganese	Silicon	Chromium	Molybdenum	Nickel	Tungsten	Cobalt	Phosphorous	Sulfur	Vanadium	Iron	Copper	Aluminum	Zinc	Titanium	Magnesium	Other
.95 1.05	0.75	1.50	4.75 5.50	.90 1.40				0.03	0.03	.20 .50	Bal.						
.65 .75	1.80 2.20	1.00	.80 1.20	.80 1.30				0.025	0.025		Bal.						
1.40 1.60	1.00	1.50	11.0 13.0	.70 1.20			.70 1.00	0.03	0.03	.40 1.00	Bal.						
2.10 2.30	0.75	1.00	11.5 13.0	0.40				0.025	0.025		Bal.						
2.10 2.35	0.75	.80 1.20	11.5 13.0	0.40		.80 1.20		0.025	0.025		Bal.						
.30 .40	0.75	.95 1.15	4.60 5.60	1.20 1.60				0.025	0.025	.30 .50	Bal.						
.30 .42	0.75	1.50	4.75 5.75	1.25 1.75				0.03	0.03	.75 1.20	Bal.						
.65 .75	0.75	1.00	.80 1.00		1.50 1.90			0.025	0.025		Bal.						
.78 .88	0.75	1.00	3.75 4.50	4.50 5.50	0.25	5.50 6.75	0.25	0.03	0.03	1.25 2.20	Bal.						
1.25 1.35	0.75	1.00	3.75 4.50	4.50 5.50		5.20 6.20		0.025	0.025	3.60 4.40	Bal.						
1.00 1.20	0.75	1.00	3.50 4.25	9.0 10.0		1.25 1.75	7.50 8.50	0.025	0.025	.95 1.35	Bal.						
.85 1.00	1.00 1.30	1.50	.40 1.00			.40 .60		0.03	0.03	0.30	Bal.						
.85 .95	1.50 1.80	1.00	0.40	0.30				0.025	0.025	0.30	Bal.						
1.10 1.20	0.75	1.00	.50 .70			1.65 1.85		0.025	0.025	.15 .25	Bal.						
.45 .55	0.75	1.00	1.35 1.65			2.35 2.65		0.025	0.025		Bal.						
.45 .55	0.75	.90 1.20		.40 .60				0.025	0.025	0.30	Bal.						
.50 .60	.70 .90	1.80 2.20	0.30					0.025	0.025	0.30	Bal.						
.50 .60	.60 1.00	1.75 2.25	0.35	.20 .80				0.03	0.03	0.35	Bal.						
.45 .55	.40 .80	.60 1.00	3.00 3.50	1.20 1.60				0.03	0.03		Bal.						
.65 .75	0.75	1.00	3.75 4.50			17.25 18.75		0.025	0.025	.90 1.30	Bal.						