Workpiece materials have been categorized within their ISO application range. Examples of materials in each of these categories are provided for easy reference. Use these categories to determine the proper machining parameters once a chip control style and grade have been selected.

Workpiece Material (Category)	Examples
Low Carbon (<0.3% C) and Free-Machining Steel **P1**	• AISI 1000 Series (1005-1029) • AISI 1100 Series (1108-1119, 1141, 1151) • AISI 1200 Series • AISI 1500 Series (1513-1522) • AISI 10L18, 11L17, 11L37, 11L41, 12L13, 12L14, 12L15 • A36
Medium and High Carbon Steel (>0.3% C) **P2**	• AISI 1000 Series (1030-1095) • AISI 1100 Series (1132, 1137, 1139, 1140, 1144, 1145, 1146) • AISI 1500 Series (1524-1572) • AISI 10L45, 10L50, 11L44
Low Alloy Steels **P3**	• AISI 1300 Series (1340, 1345) • AISI 2000 Series • AISI 3000 Series (3135, 3415, 3435) • AISI 4000 Series (4042, 4047, 4060, 4130, 4135, 4140, 4142, 4145, 4147, 4150, 4161, 4340, 4520) • AISI 5000 Series (5015, 5046, 5115, 5132, 5140, 5145, 5147 5150, 5155, 5160) • AISI 6000 Series (6150) • AISI 8000 Series (8620, 8640, 8642, 8645, 8650, 8655, 8660, 8740, 8742) • AISI 9000 Series (9254, 9255, 9260, 9840) • AISI 40B44, 41L30, 41L40, 41L45, 41L47, 41L50, 43L40, 41L50, 50B40, 50B46, 50B50, 50B60, 51B60, 51L32, 52100, 81B45, 86B45, 86L20, 86L40 • P20 Series
High Alloy Steels and Tool Steels **P4**	• AISI 4340M, 4340V • SAE Class A, D, H, O, S, M and T tool steels • 300M • 2515 • 50100, 51100, 52100
Austenitic Stainless Steel (200 and 300 Series) **M1**	• ANSI 200 Series (200, 209, 219) • ANSI 300 Series (301, 302, 303, 304, 304L, 308, 309, 310, 310, 312, 316, 316L, 316Ti, 317L, 318, 321, 326Ti, 329, 347, 384) • ASTM XM-1, XM-5, XM-7, XM-21
Austenitic-Ferritic Stainless Steel (Duplex) **M2**	• AISI 316LN, 323, S17400, S30415, S31254, S31500, S31753, S31803, S32304, S32750, S32900 • F55 • 2205 • Nitronic 32, Nitronic 33, Nitronic 40, Nitronic 50, Nitronic 60
Ferritic, Martensitic and PH Stainless Steel (400 and 500 Series and PH) **M3**	• AISI 400 Series (410, 416, 416Se, 420F, 440, 440C) • AISI 500 Series (502, 504) • 15-5 PH, 16-6 PH, 17-4 PH, 17-7 PH, 13-8 PH

Workpiece Material (Category)	Examples
Gray Cast Iron **K1**	• ASTM A48: Class 20, 25, 30, 35, 40, 45, 50, 55, 60 • SAE J 431: G1800, G3000, G3500, G4000
Ductile, Compacted Graphite, and Malleable Cast Irons **K2**	• ASTM A47: Grade 32510, 35018, 40010, 50005, 70003 • SAE J 148: M3210, M4504, M5003, M5503, M7002 • SAE J 434: D4018, D4512, D5506, D7003 • Grade 250, 300, 350, 400, 450
Nodular Iron **K3**	• ASTM: 60-40-18, 65-45-12, 80-55-06, 100-70-03, 120-90-02, 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185
Free Machining Non-Ferrous Alloys and Low Silicon Aluminum Alloys (<12% Si) **N1**	• AA • 2025, 5050, 7050, 1000, 2017 • 2001-T3, 2014-T6, 2024-T4, 6061-T6, 7075 • Silver, brass, lead alloys, platinum, gold, manganese alloys, zinc, magnesium
Non-Free Machining Non-Ferrous Alloys and High Silicon Aluminum Alloys (>12% Si) **N2**	• 413.1, 514.1, 5005A, 5056A • Aluminum bronze, cupro-nickel, manganese bronze
Copper, Copper Alloys, Bronze **N3**	• B-148-52 • C18200, C23000, C26000, C27200, C27700, C63000, C81500, C83600, C86200, C86500, C90700, C90800, C93200, C93700, C93800, C94100
Plastics, Nylon, Rubbers, Phenolics, Resins and Graphite Composites **N4**	• Plastics, Nylon, Rubbers, Phenolics, Resins • Carbon and Graphite Composites • Graphite (280-400 HB, 30-40 HRC) • Brush alloys • Kevlar • CFK, CFRP

Workpiece Material (Category)	Examples
Iron-Based Heat-Resistant Alloys **S1**	• ASTM A286, A297, A351, A608, A567, A608 • Discaloy • EV9, EV11, HNV3 • Incoloy 800 Series • Invar • Lapelloy • M308 • N-155 • 16-25-6 • 19-9 DL • N08028, N08031, N08330, N08800, R30155, R30556, S41800, S66286
Cobalt-Based Heat-Resistant Alloys **S2**	• AiResist 13, AiResist 213 • Haynes 21, Haynes 25 (L605), Haynes 188 • H531 • J-1570 • Jetalloy 209 • MAR-M302, MAR-M509 • MP159, MP35N • NASA Co-W-Re • Stellite (21, 30, 31) • R30188, R30605 • WI-52, WI-62
Nickel-Based Heat-Resistant Alloys **S3**	• ASTM 5391, 5660, 5383, 5397, 5399, 5544, 5390A, 5666 • Astroloy • Haynes 263, 600 • Hastelloy B, C, C-276, G, N, S, W, X • Inconel 600 and 700 Series (601, 617, 625, 700, 706, 713, 718) • IN100, IN102 • Incoloy 900 Series (901) • Jessop G64 • K-500 • M252 • Mar-M200, Mar-M247 • Monel • N06075, N10276, N00625, N08825, N07718, N07750, N10001, N00751 • Nimocast PD16 • Nimonic (101, 105, 115, 263, 80A, 81, 86, 90, 901, 91) • Refractaloy 26 • Rene 41, 95 • Udimet (500, 700) • Waspalloy
Titanium and Titanium Alloys **S4**	• Pure: Ti 98.8, Ti 98.9,Ti 99.9; • Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al • R50250, R52250, R54620, R56400, R56620

Hardened Steels and Cast Irons **H1**	• Tool Steel H10, H11, H13, D2, D3, 4340, P20 • Ni-Hard 1, Ni-Hard 2, Ni-Hard 4 • 440A • 610 • 0-2