



SPECIALTY STEELS & ALLOYS

Nominal Chemistry and Popular Industry Specifications

APRIL 2007

This Tech-Brief will provide you with useful information for personal and customer reference. However, be aware that portions of it could become obsolete due to changes that may be made in our product line.

HIGH STRENGTH LOW ALLOY STEELS

Nominal Chemistry

Alloy	C	Mn	Si	Cr	Ni	Mo	V	Co	Other
300M	0.42	0.75	1.65	0.80	1.80	0.40	0.07	-	
35NCD16	0.40	0.40	0.30	1.80	4.00	0.45	-	-	
4330+V	0.30	0.85	0.30	0.85	1.80	0.40	0.07	-	
4335+V	0.35	0.75	0.50	0.80	1.80	0.40	0.20	-	
4340	0.40	0.75	0.30	0.80	1.80	0.25	-	-	
AF1410	0.15	0.10	0.10	2.00	10.00	1.00	-	14.00	
AF1410 Mod	0.20	0.10	0.10	2.00	10.00	1.00	-	14.00	
D6AC	0.46	0.75	0.25	1.10	0.60	1.00	0.10	-	
Dynaflex H-11	0.40	0.30	0.90	5.00	-	1.30	0.50	-	
HP 9-4-20	0.20	0.30	0.05	0.75	9.00	1.00	0.10	4.50	
HP 9-4-30	0.30	0.30	0.05	1.00	7.50	1.00	0.10	4.50	
HY-180	0.13	0.10	0.05	2.00	10.00	1.00	-	8.00	
Hy-Tuf	0.25	1.35	1.50	0.30	1.80	0.40	-	-	
L6305	0.44	0.55	0.25	0.95	-	0.50	0.28	-	
Marvac 250 (maraging)	0.01	0.10	0.10	-	18.50	4.90	-	7.75	0.40 Ti / 0.10 Al
Marvac 300 (maraging)	0.01	0.10	0.10	-	18.50	4.90	-	9.00	0.65 Ti / 0.10 Al
Marvac 350 (maraging)	0.01	0.10	0.10	-	18.50	4.90	-	12.00	1.40 Ti / 0.10 Al
UT 18	0.40	0.60	0.25	3.25	-	1.00	0.20	-	

Popular Industry Specifications

300M	AMS 6417, AMS 6419, AMS 6257, Boeing BMS 7-26, Douglas DMS 1935, Grumman GM 1012, MIL-S-83135, Lockheed C-05-1190, Curtiss Wright CPS 4911, Bendix CE-0896, Messier-Dowty MTL 1201
35NCD16	Messier-Dowty MAT 135, SNECMA 079, Messier-Bugatti IGQ 41-06E
4330 + V	AMS 6411, Boeing BMS 7-122, Boeing BMS 7-27, Grumman GM 1010, General Dynamics FMS 1012, Allied Signal EMS 96242, MIL-S-8699, Airesearch EMS 56276, Bendix CE0906
4335 + V	AMS 6429, MIL-MK-46-45, MIL-S-81054
4340 VAC ARC	AMS 6414, AMS-S-5000, Bell 299-947-055, Douglas DMS 1555, , Sikorsky SS-9702, MSRR 6114
4340 VIM VAR	Boeing Helicopters BMS 7-250, Bell 299-947-335
AF1410	AMS 6527, Mac Air MMS 214
AF1410 Mod	Mac Air MMS 216
D6AC	AMS 6431, General Dynamics FMS 1011, Grumman GM 1013, Thiokol STW 2606, U.T.C. 4MDS-20701, Lockheed STM05-500 and LCM05-2190, MIL-S-8949, Hercules HS-6-0284
Dynaflex H11	AMS 6487, Bell 299-947-084, Mac Air MMS 260, SPS-M-260, many others
HP 9-4-20	AMS 6525, Boeing BMS 7-182 Type IV, Mac Air MMS-2101, Rockwell Int'l BL0160-180, Rockwell Int'l ST0160LB0002
HP 9-4-30	AMS 6526, Boeing BMS 7-182 Type II, Mac Air MMS-2102, Rockwell Int'l ST0160LB0004, Rockwell Int'l ST0160LB0012, Garrett EMS 96247
HY-180	Lockheed FMS 1111D + AMD 1
Hy-Tuf	AMS 6425, Douglas DMS 1841 Grade A, Northrop NAI 1275, MIL-S-7108
L6305	AMS 6305, PWA 768, PWA 733, PWA 817, CPW 245, GE C50T7F
Marvac 250	AMS 6512, AMS 6520, MIL-S-46850, Sikorsky SS9700, Hughes HMS 6-1080, GE B50TF95
Marvac 300	AMS 6514, AMS 6521, MIL-S-46850
Marvac 350	MIL-S-46850
UT 18	Allison Gas Turbine EMS 64500, Messier-Dowty MAT 122, British Standard 2S 132

HIGH PERFORMANCE BEARING & GEAR STEELS

Nominal Chemistry

Alloy	C	Mn	Si	Cr	Ni	Mo	V	Other
16NCD13	0.15	0.50	0.25	1.00	3.25	0.25	-	-
4340	0.40	0.75	0.30	0.80	1.80	0.25	-	-
440C	1.00	0.45	0.70	17.00	-	0.50	-	-
440 N-DUR™	0.58	0.45	0.30	15.00	-	0.50	-	0.170 N
52100	1.05	0.35	0.30	1.50	-	-	-	-
9310	0.10	0.50	0.25	1.20	3.25	0.12	-	-
BG42	1.15	0.50	0.30	14.50	-	4.00	1.20	-
CBS-50 NiL	0.13	0.25	0.20	4.10	3.40	4.25	1.20	-
CBS-223	0.14	0.30	0.90	5.00	-	1.40	0.45	1.35 W
CBS-600	0.19	0.60	1.10	1.45	-	1.00	-	-
CSS-42L™	0.12	0.15	0.15	14.00	2.00	4.75	0.60	12.50 Co / 0.02 Cb (Nb)
Lesco 53	0.11	0.40	0.90	1.00	2.00	3.25	0.10	2.00 Cu
M50	0.85	0.30	0.20	4.10	-	4.25	1.00	-
Nitralloy N	0.24	0.60	0.30	1.15	3.50	0.25	-	1.25 Al
Nitralloy 135M	0.40	0.60	0.30	1.60	-	0.35	-	1.20 Al

Popular Industry Specifications

16NCD13	SNECMA DMD 180-20, Aerospatiale IGC 04.31.154, AIR 9160
4340 VAC ARC	AMS 6414, AMS-S-5000, Bell 299-947-055, Douglas DMS 1555, , Sikorsky SS-9702, MSRR 6114
4340 VIM-VAR	Boeing Helicopters BMS 7-250, Bell 299-947-335
440C	AMS 5618, QQS-763, many bearing customer specifications
440N-DUR™	EMS 385 (air melt)
52100	AMS 6444, PWA 723, many others including bearing customer specifications
9310 VAC ARC	AMS 6265, Bell 299-947-032, AMS 6260, AMS 6267, EMS 56280, MIL-S-7393 and MIL-S-83030
9310 VIM-VAR	Boeing Helicopters BMS 7-249 Type III, Bell 299-947-302, Sikorsky SS-9705, Solar Turbine ESR 0160
BG-42	AMS 5749, PWA 778
CBS-50 NIL	AMS 6278, GE B50TF211, Rolls Royce MSRR 6113, PWA 36140, CPW 492, several bearing customer specifications
CBS-223	Boeing Helicopters BMS 7-223
CBS-600	AMS 6255
CSS-42L™	U. S. Patent No. 5,424,028, AMS 5932
Lesco 53	AMS 6308, Bell 299-947-334
M50 VAC ARC	AMS 6490, Bell 299-947-087
M50 VIM VAR	AMS 6491, PWA793, GE C50TF56, Rolls-Royce MSRR 6083, PWA 725, CPW 378, many bearing customer specifications
Nitralloy N	AMS 6475, Bell 299-947-042, MIL-S-869, Hughes HMS 6-1133
Nitralloy 135M	AMS 6471, Bell 299-947-036 and -083, GE B50TA314, Lycoming M4002, MIL-S-6709

PRECIPITATION HARDENING STAINLESS STEELS

Nominal Chemistry

Alloy	C	Mn	Si	Cr	Ni	Cu	Mo	Al	Cb (Nb)
13-8 Mo	0.04	-	-	12.60	8.30	-	2.15	1.00	-
15-5	0.04	0.65	0.35	14.75	4.75	3.50	-	-	0.30
17-4	0.04	0.65	0.35	15.70	4.70	3.50	-	-	0.30

Popular Industry Specifications

13-8 Mo	AMS 5629, Lockheed STM05-602, Rockwell Int'l. ST016LB0013, ASTM A564, ST0160LB0005, ST0160LB0160-178, General Dynamics 0-73687, Boeing Helicopters BMS 7-349
15-5	AMS 5659, ASTM A564, Rockwell Int'l. MB0160-036
17-4	AMS 5622, AMS 5643, ASTM A564

STEAM TURBINE ALLOYS

Nominal Chemistry

Alloy	C	Mn	Si	Cr	Ni	Mo	V	Other
410Cb	0.13	0.50	0.30	11.60	0.60	-	-	0.08 Cb (Nb)
422	0.22	0.75	0.35	12.00	0.85	1.00	0.25	1.10 W
Jethete M152	0.14	0.70	0.15	12.00	2.75	1.75	0.30	

Popular Industry Specifications

410Cb	GE B50A490, Elliott MS 511B
422	Westinghouse PDS 10725AB, ASTM A565 - Grade 616, Dresser Rand M-8663, others
Jethete M152	AMS 5719, GE B50A558, many others

MULTIPHASE ALLOYS

Nominal Chemistry

Alloy	Co	Ni	Cr	Mo	Fe	Ti
MP35N	35.0	35.0	20.0	10.0	-	-
MP159	35.7	25.5	19.0	7.0	9.0	3.0

Popular Industry Specifications

MP35N	AMS 5758, AMS 5844, AMS 5845, Northrop M-360, NACE MR0175, ASTM F562, SPS-M-646, Sulzer Q.20.006 Well
MP159	AMS 5841, AMS 5842, AMS 5843, SPS-M-663



**LATROBE SPECIALTY
STEEL COMPANY**

Latrobe, Pennsylvania 15650-0031 U.S.A.
Phone: (724) 537-7711 Fax: (724) 532-6316
www.latrobebesteel.com