



Flowformed Materials

MATERIAL	CATEGORY	MATERIAL	SPECIFICATION	NOMINAL CHEMISTRIES	MATERIAL CONDITION	.2% YIELD KSI	UTS, KSI	ELONG. %	HARDNESS ~ RC	DENSITY LBS/CU"	
TITANIUM	Unalloyed	Titanium Grade 2	AMS 4942C	99.8 Ti		As Flowformed	110	124	24	25	0.163
	Near Alpha	Titanium Grade 9 (Ti 3Al-2.5V)	AMS 4944E	94.5 Ti 3Al	2.5V	As Flowformed	130	159	14	35	0.162
	Alpha-Beta	Ti Grade 5 (Ti 6Al-4V)	AMS 4928P	90 Ti 6Al	4V	As Flowformed	158	193	14	41	0.162
	Alpha-Beta	Ti Grade 23 (Ti 6Al-4V ELI)	AMS 4930D	90 Ti 6Al	4V (ELI)	As Flowformed	163	186	16	40	0.162
	Near Alpha	Titanium 6Al-2Sn-4Zr-2Mo	AMS 4975	86 Ti 6Al	2Sn 4Zr 2Mo	As Flowformed	140	150	14	32	0.164
	Near Alpha	ATI 425 (Ti 4Al-2.5V)		92 Ti 4Al	2.5V 1.5Fe	As Flowformed	147	181	14	40	0.162
	Near Alpha	ATI 425 (Ti 4Al-2.5V)		92 Ti 4Al	2.5V 1.5Fe	Flowformed & Aged	175	180	11	40	0.162
	Beta	Titanium Beta C	AMS 4958	75 Ti 3Al	8V 6Cr 4Zr 4Mo	As Flowformed	154	192	5	41	0.174
	Beta	Titanium Beta C	AMS 4958	75 Ti 3Al	8V 6Cr 4Zr 4Mo	FF, Anneal & Aged	143	154	14	34	0.174
	Beta	Titanium 15-3	AMS 4914A	76 Ti 15V	3Al 3Cr 3Sn	As Flowformed	189	206	6	43	0.172
STAINLESS STEEL	Austenitic	304 Stainless	AMS 5647G	19Cr 1Mn	10Ni .5Si	As Flowformed	166	181	16	34	0.287
		316 Stainless	AMS 5653B	17Cr 1Mn	2.5Mo 12Ni .5Si	As Flowformed	165	178	15	34	0.287
		Nitronic 50	AMS 5764C	22Cr 12.5Ni		As Flowformed	165	178	14	39	0.285
	Non-Magnetic	P550	Schoeller-Bleck.	19Cr 19Mn	.5Mo .6N .06C	As Flowformed	212	238	13	45	0.285
		15-5 PH Stainless	AMS 5659F	15Cr 5Ni	3.5Cu	Flowformed & Aged	196	198	10	42	0.282
		17-4 PH Stainless	AMS 5528F	17Cr 4Ni	4Cu	As Flowformed	153	185	13	40	0.281
		17-7 PH Stainless	AMS 5643M	17Cr 7Ni		As Flowformed	150	185	12	40	0.281
	Duplex	Custom 465	UNS S46500	12Cr 11Ni		Flowformed & Aged	247	258	10	50	0.283
		Super Duplex 918	UNS S39277	25Cr 7Ni	3.5Mo	As Flowformed	198	232	11	45	0.283
		Inconel 718	AMS 5662J	52.5Ni 19Cr	5Nb 3Mo	FF, Anneal & Aged	189	220	21	46	0.296
NICKEL BASED ALLOY		Inconel 718	AMS 5662J	52.5Ni 19Cr	5Nb 3Mo	As Flowformed	200	240	10	48	0.296
		Waspaloy	AMS 5706J	57 Ni 19.5Cr	13Co 4Mo 3Ti	As Flowformed	130	185	23	40	0.296
		Nickel 201	ASTM B 160	99Ni		As Flowformed	82	88	10	18	0.321
		Monel 400	AMS 4675	66Ni 32Cu		As Flowformed	108	121	17	24	0.318
		Inconel 625	AMS 5581	61Ni 21.5Cr	9Mo 2.5Fe	As Flowformed	130	150	14	33	0.294
		Inconel 825	ASTM 163	42Ni 21.5Cr	3Mo	As Flowformed	130	164	12	34	0.294
STEEL ALLOY	Chromium-Molybdenum	4130 Steel	AMS 6350	.3C .8Cr .5Mn	2Mo 25Si	As Flowformed	130	157	14	35	0.284
		4130 Steel	AMS 6350	.3C .8Cr .5Mn	2Mo 25Si	Rc 37 & Flowformed	185	212	9	39	0.284
		4140 Steel	AMS 6362	.4C .95Cr .85Mn	2Mo 25Si	As Flowformed	126	138	24	30	0.284
	Nickel-Chromium-Moly.	4340 Steel	AMS 6414	.4C .8Cr 1.83Ni	25Mo .7Mn .23Si	Rc 32 & Flowformed	154	192	15	41	0.284
		8620 Steel	AMS 6274L	.2C .5Cr .55Ni	2Mo	As Flowformed & HT	81	108	25	28	0.284
	Ferritic-Chromium-Alum.	9310 Steel	AMS 6260M	.13C 1.2Cr	3.2Ni 12Mo	As Flowformed & HT	83	132	18	27	0.284
		Incoloy MA956	UNS S67956	20Cr 4.5Al	.5Ti .05C .5Y	As Flowformed	156	177	6	39	0.262
	Chromium-Vanadium	CRV 6150H Mod.	MSRR 6914	.45C 1.4Cr	.7Mn .3Si	As Flowformed	187	203	14	43	0.284
		HF1	1C 1.75Mn	.85Si 2Cr		As Flowformed & HT	142	164	17	32	0.282
	HIGH STRENGTH STEEL ALLOY		Maraging Steel T-250	AMS 6519A	18.5Ni 3Mo	1.4Ti	Flowformed & Aged	286	292	5	54
Maraging Steel C-250			AMS 6512	7.5Co 4.8Mo	18.5Ni 4Ti	Flowformed & Aged	275	280	7	54	0.289
Maraging Steel C-300			AMS 6514D	8.8Co 4.8Mo	18.5Ni .73Ti	Flowformed & Aged	295	306	8	55	0.289
Maraging Steel C-350			MIL-S-46850 IV	12Co 4.8Mo	18.5Ni 1.4Ti	Flowformed & Aged	382	389	3	60+	0.289
MULTIPHASE ALLOY		Aermet 100	AMS 6352	13.4Co 1.2Mo	11Ni 3Cr	Flowformed & Aged	250	270	11	53	0.285
		MP35N	AMS 5844	35Co 35Ni	20Cr 10Mo	As Flowformed	251	270	13	51	0.304
MAGNESIUM		Magnesium AZ80A	ASTM B107M	91 Mg 8.5Al	6Zn 1Si	As Flowformed	26	37	12		0.064
ALUMINUM ALLOY		Aluminum 3003	AMS 4067H	98Al 1Mn	1Cu	As Flowformed	20	25	12		0.098
		Aluminum 6061-T9	AMS A 22771	98 Al .6 Si	.2Cu	T4 & then Flowform	47	51	18		0.098
		Aluminum 6061	AMS A 22771	98 Al .6 Si	.2Cu	T6 & then Flowform	54	57	14		0.098
		Aluminum 7075-T6	AMS QQ A200/11	90 Al 5.5Zn	2.5 Mg 1.6Cu	W. Flowformed & Aged	77	86	14		0.102
REFRACTORY ALLOY		Zircaloy 4	ASTM B351	98.5Zr 1.4Sn	.2Fe .1Cr .12O	FF & Stress Relieved	35	60	20		0.237
		Zirconium 702, Com. Pure	ASTM B658	99.2Zr		FF & Stress Relieved	49	71	33		0.235
		Niobium	ASTM B394	100Nb		Flowformed & Annealed	20	35	20		0.311
		Columbium 103	AMS 7852	90Nb 10Hf		As Flowformed	84	102	5		0.32
		Tantalum	AMS 7849	100Ta		Flowformed & Annealed	25	40	50		0.602
		Tantalum 10% Tungsten	AMS 7846	90Ta 10W		Flowformed & Annealed	70	90	30		0.602
PRECIOUS METAL		Silver	99.95%	99Ag		As Flowformed	33	35	20		0.379
COPPER BASED ALLOY		Copper - Oxygen Free	ASTM B42	99.9Cu		As Flowformed	50	70	15		0.322
		Copper Beryllium	UNS C17200	98Cu 1.4Ni	.4Pb .3Be	As Flowformed	190	215	10	44	0.302
		Cartridge Brass	UNS C26000	70 Cu 28.5Zn		As Flowformed	65	80	10		0.308
		Toughmet 3 AT110	ASTM B 505	77Cu 15Ni	8Sn	As Flowformed & HT	110	125	10	30	0.323
BEARING STEEL		52100 Steel	ASTM A 295	1C .35Mn	.25Si 1.45Cr	As Flowformed & HT				64	0.282
TOOL STEEL		M50 Steel	ASTM A 600	.85C 4Cr	.35Mn 4.5Mo 1V	As Flowformed & HT				64	0.288

Materials can be post flowformed heat treated differently to alter the mechanical properties from what is shown on the matrix.