



Non-Ferrous Chemical & Mechanical Properties

*Refer to IFI B152 -B153 for more information

Alloy	Composition, % maximum except as shown										Information	Appoximate Rockwell Hardness	Approx Tensile Strength	Approx Yeild Strength
	Phophorus	Sulfur	Silicon	Carbon	Chromium	Nickel	Copper	Manganese	Molybdenum	Other Compos-itions				
300 SERIES 18-8 Stainless: Non-magnetic, favourable corrosion resistance in comparison to other stainless alloys. Not hardenable with heat, higher temperatures provide greater strength. Ninety percent of Stainless fasteners sold in North America are 300 series.														
300 Series (18.8 Stain-less)	0.045%	.03 to 15%	1%	.03 to .05%	17 to 19%	8 to 10.5%	0 to 4%	2%			Most commonly used for non-magnetic stainless fasteners.	B85-95	80,000 to 150,000	80,000 to 90,000
302 Series	0.045%	0.03%	1%	0.15%	17 to 19%	8 to 10%		2%			Used in most wire applications such as cables, screens, springs,etc.	B85-95	90,000 to 125,000	50,000 to 70,000
302HQ and XM7 Series	0.045%	0.03%	1%	0.03%	17 to 19%	8 to 10%		2%			Commonly used for machine screws, smaller nuts, etc.	B85-95	80,000 to 140,000	40,000 to 90,000
303 Series	0.02%	.15 min	1%	0.15%	17 to 19%	8 to 10%		2%	.60 max		Provides greater machineability for products including larger nuts. Not reccomended for cold forming.	B85-95	90,000 to 125,000	40,000
304 & 304L Series	0.45%	0.03%	1%	0.08%	18 to 20%	8 to 10.5%		2%			Typically used for all hex head cap screws and flat washers.	B85-95	85,000 to 150,000	40,000 to 70,000
305 Series	0.05%	0.03%	1%	0.12%	17 to 19%	10.5 to 13%		2%			Ensures parts are non-magnetic and lowers work hardening during cold forming due to high nickel content.	B85-95	80,000 to 140,000	40,000 to 90,000
316 Series	0.05%	0.03%	1%	0.08%	16 to 18%	10 to 14%		2%	2 to 3%		Increased welding capacity due to its low carbon content	40,000 Min.	80,000 to 120,000	50,000 to 140,000
400 SERIES: Magnetic, less corrosive in comparison to other stainless alloys. Used in higher temperatures up to approx. 593.3oC, Ten percent of Stainless fasteners sold in North America are 400 Series.														
410 Series	0.04%	0.03%	1%	0.15%	11.5 to 13.5%			1%			Increased strength is achieved due to higher carbon content. 410 is the most popular series as it is used in high strength conditions.	C34	180,000 heat treated	150,000 heat treated
420 Series	0.04%	0.03%	1%	.30 to 15%	12 to 14%			1%			Increased strength is achieved due to higher carbon content then other 400 series therefore decreasing corrosion resistance.	C45	250,000 heat treated	200,000 heat treated

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	Pho-phorus	Sulfur	Silicon	Car-bon	Chro-mium	Nickel	Copper	Manga-nese	Molyb-denum	Other Compositions				
Brass, Bronze & Copper SERIES: Non-magnetic, Brass and Bronze Series are considered low strength, provide greater electrical and thermal conductivity, and have greater corrosion resistance.														
270 Brass Series							65%			35% Zinc	Excellent for cold forming due to its high copper content.	B65	70,000	45,000
360 Brass Series							61.50%			3% Lead and remainder Zinc	Typically used for screw machine parts as they have greater machineability.	B55	50,000	30,000
Commercial Brass							60-65%			35%-40% Zinc. .05 to .15% Lead	The material becomes stronger as copper content decreases. Better for cold forming when copper content increases.	B60	55,000	35,000
Bronze Alloy 651 Series			2%				96% min	0.07%		1.5% Zinc, .05% Lead	Typical for hex head cap screws.	B70 to B75	70,000 to 80,000	35,000 to 45000
Bronze Alloy 655 Series			3.8%			0.06%	94.8% min	1.5%		1.5% Zinc, .05% Lead	Commonly used in hot forged fasteners.	B70 to B75	70,000 to 80,000	35,000 to 45000
Commercial Bronze			2 to 4%				94 to 96%			.05 to .8% Lead, .05 to 1.5% Zinc.	Greater machineability due to its lead content.	B70 to B75	70,000 to 80,000	35,000 to 45000
Aluminum Series: non-magnetic, weighs one third when compared to steel and has greater electrical conductivity. High strength to weight ratio.														
Aluminum 2024 Series			0.5%		0.1%		3.8 to 4.9%	.3 to 9%		1.2 to 1.8% Mag. 0.15% Titanium 0.5% Iron. 0.25% Zinc. Remaining Aluminum	Most common application of all aluminum alloys. Typically used for most hex head cap screws and flat washers.	B70 to B85 heat treated	55,000 to 70,000 heat treated	40,000 heat treated
Aluminum T-6 Heat Treated			.4 to .8%		.04 to .35%		.15 to 4%	0.15%		0.8 to 1.2% Mag. 0.15% Titanium 0.7% Iron. 0.25% Zinc. Remaining Aluminum	Typically used for all hex nuts.	B40 to B50 heat treated	37,000 to 52,000 heat treated	30,000 heat treated
Aluminum 7075-T73 Heat Treated										2.1 to 2.9% Mag. 0.2% Titanium 0.5% Iron. 5.1 to 6.1% Zinc. Remaining Aluminum	Contains the highest percentage of Zinc and magnesium when comparing to other aluminum series.	B80 to B90 heat treated	60,000 to 75,000 heat treated	50,000 heat treated