



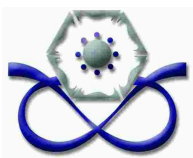
The Ralin Group Ltd (Bespoke Bolting)



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Marking Symbol	B7/L7	B16	B8 Class 1	B8M Class 1
Grade of Bolting				
Service Conditions	-100 °C to 400 °C	0 °C to 520 °C	-250 °C to 575 °C	-250 °C to 600 °C
Material Specifications	ASTM-193/A193M	ASTM-A193/A193M	ASTM-A193/A193M	ASTM-A193/A193M
	AISI 4140	Cr-Mo-V	AISI Type 304	AISI Type 316
Chemical Composition				
Carbon	0.37-0.49	0.36-0.47	0.08 Max	0.08 Max
Silicon	0.15-0.35	0.15-0.35	1.00 Max	1.00 Max
Manganese	0.65-1.10	0.45-0.70	2.00 Max	2.00 Max
Nickel	-	-	8.00-10.50	10.00-14.00
Chromium	0.75-1.20	0.80-1.15	18.00-20.00	16.00-18.00
Molybdenum	0.15-0.25	0.50-0.65	-	2.00-3.00
Vanadium	-	0.25-0.35	-	-
Sulphur	0.040 Max	0.040 Max	0.030 Max	0.030 Max
Phosphorus	0.035 Max	0.035 Max	0.045 Max	0.045 Max
Mechanical Properties				
Limiting Ruling Selection	2 1/2 and under	2 1/2" and under	-	-
Minimum Tensile Strength	860 MPA	860 MPA	515 MPA	515 MPA
Yield Strength	720 MPA	725 MPA	205 MPA	205 MPA
Min 0.2% Offset	(725 MPA for L7)			
Minimum Elongation in 4D%	16	18	30	30
Minimum Reduction of Area%	50	50	50	50
Brinell Harness	-	-	223HB or 96HRB	223HB or 96HRB



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Marking Symbol and Grade of Nut	2H	4	8	8M
Service Conditions	0 °C to 450 °C	-100 °C to 520 °C	-250 °C to 575 °C	-250 °C to 600 °C
Material Specifications	ASTM-A 194/A194M Carbon Steel	ASTM-A194/A194M Carbon, Moly	ASTM-A194/A194M AISI Type 304	ASTM-A194/A194M AISI Type 316
Chemical Composition				
Carbon	0.40 Min	0.40-0.50	0.08 Max	0.08 Max
Silicon	0.40 Max	0.15-0.35	1.00 Max	1.00 Max
Manganese	1.00 Max	0.70-0.90	2.00 Max	2.00 Max
Nickel	-	-	8.00-10.50	10.00-14.00
Chromium	-	-	18.00-20.00	16.00-18.00
Molybdenum	-	0.20-0.30	-	2.00-3.00
Sulphur	0.050 Max	0.040 Max	0.030 Max	0.030 Max
Phosphorus	0.040 Max	0.035 Max	0.045 Max	0.045 Max
Mechanical Properties				
	<1 1/2" >1 1/2"			
Brinell Hardness	248-352 212-352	248-352	126-300	126-300

Marking Symbol and Grade of Nut	3	6	7	8T
Service Conditions		0 °C to 575 °C	-100 °C to 565 °C	-250 °C to 575 °C
Material Specifications	ASTM-A194/A194M AISI 501	ASTM-A194/A194M AISI 410	ASTM-A194/A194M AISI Type 4140	ASTM-A194/A194M AISI Type 321
Chemical Composition				
Carbon	0.10 Min	0.15 Max	0.37-0.49	0.08 Max
Silicon	1.00 Max	1.00 Max	0.15-0.35	1.00 Max
Manganese	1.00 Max	1.00 Max	0.65- 1.10	2.00 Max
Nickel	-	-	-	9.00-12.00
Chromium	4.00-6.00	11.50-13.50	0.75-1.20	17.00-19.00
Molybdenum	0.40-0.65	-	0.15-0.25	2.00-3.00
Sulphur	0.030 Max	0.030 Max	0.040 Max	0.030 Max
Phosphorus	0.040 Max	0.040 Max	0.040 Max	0.045 Max
Ti	-	-	-	5x Carbon Content
Mechanical Properties				
Brinell Hardness	248-352	228-271	248-352	126-300