This page is mainly introduced the MARAGING (C) 300 Datasheet, including chemical information,mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of MARAGING (C) 300,such as it is commonly used in bars, sheet,plates, steel coils, steel pipes,forged and other materials application.

Datasheet for Steel Grades Special Steel MARAGING (C) 300

MARAGING (C) 300 Standard Number:		
ITEM	Standard Number	Descriptions

MARAGING (C) 300 Chemical composition(mass fraction)(wt.%)									
Chemical			Min.(%)				Max.(%)		
C	Si	Mn	P	S	Cr	Ni	Mo	V	Ta
0.03	0.10	0.10	0.010	0.010	0.50	18.00-19.00	4.60-5.20		
W	N	Cu	Co	Pb	B	Nb	Al	Ti	Other
		0.50	8.50-9.50				0.05-0.15	0.50 -0.80	Fe Bal

AMS 6514

MARAGING (C) 300
General: Maraging is a 18% nickel, cobalt strengthened steel (C-type), with excellent mechanical properties, workability and heat treatment characteristics.
Applications: Typical applications for maraging include missile and rocket motor cases, landing and takeoff gear, munitions, aerospace, extrusion tooling, die casting, high performance shafting, gears and fasteners

Material Melt Method: Maraging melt method is a VIM (Vacuum Induction Melt) + VAR (Vacuum Arc Remelt)
As Shipped Condition: Maraging is supplied in the annealed and descaled condition. The alloy is very tough, relatively soft (36 Rc Max.), therefore, readily machined and formed.

*Bar Tolerances: .250” - .499” .500” - .999” 1.000” – 3.625” 3.626” – 6.000” 6.001” – 8.000” 8.001” – 10.000”
-.000/+.005 -.000/+.010 -.000/+.031 -.000/+.047 -.000/+.063 -.000/+0.078
Minimum Properties after Aging:
Hardness ..... 52 Rc Charpy V-notch ..... 12 ft/lbs. min
Reduction of Area 47%
Elongation ..... 5.0% Yield Strength ..... 280 ksi Fracture Toughness 60
Physical Properties:
Density..... .289 lbs./cu. In
Average Coefficient of Thermal Expansion (70 – 900 F) ..... 5.6 x 10 -6 in/in. F
Heat Treatment Aging Process: (Non Die Casting Applications)
Material is to be heat treated to 900 F +/- 10 holding at temperature for 6 hours then cooling at room air temperature. During the aging treatment maraging shrinks uniformly and predictably on all dimensions .001 in/in
Heat Treatment Aging Process: (Die Casting Applications)
Following the rough machining of the die, anneal at 1500-1525 F for 1 hour per inch of thickness is recommended. After finish machining , an aging heat treatment of 980-1000 F for 6 hours is recommended.
Machining:
Maraging steel in the annealed condition is comparable to 4340. However, when maraging is aged, the type of cutting tool and speeds change. Rigid equipment, firm tool supports, sharp tools and abundant coolant are essential.
Welding:
Maraging is weld able without preheat, in both the annealed and aged condition. Only an aging heat treatment is needed to restore in the weld.
Standards:
AMS 6514 ASTM A 538 *Mil-S-46850D UNS K93120
*DMI product is not supplied to the dimensional tolerances of MIL-S-46850D.
*The information, data and specifications presented here are representative only, and are not guaranteed values. Material or

products
applications described are solely for illustrative purposes and should not be construed as express or implied warranties for fitness for these or other applications

MARAGING (C) 300 Physical Properties

Tensile strength	115-234	σb/MPa
Yield Strength	23	σ 0.2 ≥/MPa
Elongation	65	δ5≥ (%)
ψ	-	ψ≥ (%)
Akv	-	Akv≥/J
HBS	123-321	-
HRC	30	-

MARAGING (C) 300 Mechanical Properties

Tensile strength	231-231	σb/MPa
Yield Strength	154	σ 0.2 ≥/MPa
Elongation	56	δ5≥(%)
ψ	-	ψ≥(%)
Akv	-	Akv≥/J
HBS	235-268	-
HRC	30	-

MARAGING (C) 300 Heat Treatment Regime

Annealing	Quenching	Tempering	Normalizing	Q & T
√	√	√	√	√

MARAGING (C) 300 Range of products

Product type	Products	Dimension	Processes	Deliver Status
Plates / Sheets	Plates / Sheets	0.08-200mm(T)*W*L	Forging, hot rolling and cold rolling	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Steel Bar	Round Bar, Flat Bar, Square Bar	Φ8-1200mm*L	Forging, hot rolling and cold rolling, Cast	Black, Rough Turning, Shot Blasting,

Coil / Strip	Steel Coil /Steel Strip	0.03-16.0x1200mm	Cold-Rolled & Hot-Rolled	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Pipes / Tubes	Seamless Pipes/Tubes, Welded Pipes/Tubes	OD:6-219mm x WT:0.5-20.0mm	Hot extrusion, Cold Drawn, Welded	Annealed, Solution and Aging, Q+T, ACID-WASHED

We can produce Special Steel the specifications follows: