Aluminum Alloys
Refer to ASTM Specification B26/B26M-09
Chemical Compostion (%Max, unless range is stated)

													Others	
ANSI Alloy #	**Former Designation**	**UNS**	**Si**	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Ni**	**Zn**	**Sn**	**Ti**	**Each**	**Total**
319	319, Allcast	A03190	5.5-6.5	1.0	3.0-4.0	0.50	0.10	-	0.35	1.0	-	0.25	-	0.50
356	356	A03560	6.5-7.5	0.60*	0.25	0.35*	0.20-0.45	-	-	0.35	-	0.25	0.5	015
A356 (made from A356.2)	A356	A13560	6.5-7.5	0.20	0.20	0.10	0.25-0.45	-	-	0.10	-	0.20	0.05	0.15
535	Almag 35	A05350	0.15	0.15	0.05	0.10-0.25	6.2-7.5	-	-	-	-	0.10-0.25	0.05	005
713	Tenzaloy™	A07130	0.25	1.1	0.40-1.0	0.6	0.20-0.50	035	0.15	7.0-8.0	-	0.25	010	0.25

* If iron exceeds 0.45, manganese content shall not be less than one-half the iron content

Mechanical Properties

AA Number	**Tensile Strength, min**	**Yield Strength, min**	**Elongation in 2 in. or 4 x diameter, min, %**			**Typical Brinell Hardnes, 500 kgf , 10mm**	**Typical Shear Strength**	**Typical Endurance limit**	**Typical Charpy Impact Notched**
	ksi (1000 psi)	**ksi (1000 psi)**					**ksi (1000 psi)**	**ksi (1000 psi)**	**ft lbs**
319.0-F	23	13		1.5		70	22	10	1
356.0-F	19	9.5		2.0		55			1 1/2
356.0-T51	23	16		not required		60	20	8	
356.0-T6	30	20		3.0		70	26	8	2
A356.0-T6	34	24		3.5		80	26	8.5	
535.0-F	35	18		9.0		70	34	8	10-12
713.0*	32	22		3.0		75	26	9	3

* After 21 days natural aging

F=as cast, T51=cooled from an elevated temperature and artificially aged, T6=solution heat treated and then artificially aged

Charasteristics- Aluminum Alloys

ANSI Alloy #	**Resistance to Hot Cracking**	**Pressure Tightness**	**Fluidity**	**Solidification Shrinkage Tendency**	**Normally Heat Treated**	**Corrosion Resistance**	**Machin-ability**	**Polishing**	**Electro-plating**	**Anodizing Quality**	**Chemical Oxide Coating**	**Elevated Temperature Strength**		**Suitability for Welding**
319	2	2	2	2	Yes	3	3	4	2	4	3	3		2
356	1	1	1	1	Yes	2	4	5	2	4	2	3		2
A356	1	1	1	1	Yes	2	4	5	2	4	2	3		2
535	3	5	5	5	No	1	1	1	5	1	1	3		4
713	5	3	4	4	Aged only	2	1	1	2	2	3	5		4

Ratings: 1 =Excellent, 2 = Very Good, 3 = Good, 4 = Fair, 5 = Poor

Typical Physical Properties

ANSI Alloy #	**Pattern Shrinkage Allowance in/ft**	**Specific Gravity**	**Density**	**Approx. Melting Range**	**Electrical Conduc-tivity**	**Thermal Conduc-tivity**	**Coefficient of Thermal Expansion**	
			lb/cu in	**°F**	**% of A.I.C.S.**	**CGS**	**68-212°F**	**68-572°F**
319	5/32	2.79	0.101	90-1120	27	0.26	12.0	13.4
356	5/32	2.68	0.097	1035-1135	39	0.36	11.9	13.0
A356	5/32	2.68	0.097	1035-1135	39	0.36	11.9	13.0
535	5/32	2.62	0.095	1020-1150	23	0.24	13.1	14.8
713	3/16	2.81	0.102	1100-1180	35	0.35	13.1	14.2