



ACE

F O U N D R Y

ALUMINUM PERMANENT MOLDS • SAND CASTING • AIR-SET SAND CASTING • HEAT TREATING • MACHINE SHOP SERVICES

ALUMINUM ALLOY SPECIFICATIONS

PROCESS	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	PERM	PERM	PERM	PERM	PERM	PERM
ALLOY	319	319	356	356	356	356	535	713	319	319	333	356	356	356
HEAT TREAT	F	T-6	F	T-51	T-6	T-7			F	T-6	T-6	F	T-51	T-6
CHEMICAL COMPOSITION									(in %)					
Silicon	5.5-6.6	5.5-6.7	6.5-7.5	6.5-7.6	6.5-7.7	6.5-7.8	0.15	0.25	5.5-6.6	5.5-6.7	8.-10.	6.5-7.5	6.5-7.6	6.5-7.7
Iron	1	2	0.6	0.6	0.6	0.6	0.15	1.1	1	2	1	0.6	0.6	0.6
Copper	3.-4.	3.-4.	0.25	0.25	0.25	0.25	0.05	.40-1.0	3.-4.	3.-4.	3.-4.	0.25	0.25	0.25
Manganese	0.5	0.5	0.35	0.35	0.35	0.35	.10-.25	0.6	0.5	0.5	0.5	0.35	0.35	0.35
Magnesium	0.1	0.1	.20-.45	.20-.46	.20-.47	.20-.48	6.2-7.5	.20-.50	0.1	0.1	.05-.50	.20-.45	.20-.46	.20-.47
Chromium								0.35						
Nickel	0.35	0.35						0.15	0.35	0.35	0.5			
Zinc	1	1	0.35	0.35	0.35	0.35		7.0-8.0	1	1	1	0.35	0.35	0.35
Titanium	0.25	0.25	0.25	0.25	0.25	0.25	.10-.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
other	0.5	0.5	0.15	0.15	0.15	0.15	0.15	0.25	0.5	0.5	0.5	0.15	0.15	0.15
STRENGTH									(IN 000 lbs)					
Tensile ultimate	23	31	19	23	30	31	35	32	28	34	35	21	25	33
Yield	13	20	13	16	20	29	18	22	14	27	30	13	20	22
% elongation	1.5	105	2	2	3	2	9	3	1.5	2	1.5	3	2	3
Brinell	55-85	65-95	40-70	45-75	55-90	60-90	60-90	60-90	70-100	75-105	85-115	40-70	55-85	65-95
CHARACTERISTICS									(a= excelent, f= poor)					
Pressure tight	b	b	a	a	a	a	f	d	b	b	b	a	a	a
Heat treated	yes	yes	yes	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes
Corrosion rest.	c	c	b	b	b	b	A	c	c	c	c	b	b	b
Machineability	c	b	c	b	b	b	a	a	c	b	c	c	a	a
Polishing	d	d	d	d	d	d	a	a	d	d	c	d	d	d
Anodizing	d	d	d	d	d	d	a	a	d	d	d	d	d	d
Weldability	b	b	a	a	a	a	d	d	b	b	c	a	a	a
PHYSICAL PROPERTIES														
Electric conduct	27	27	39	39	39	39	23	30	27	27	29	39	39	39
Thermal conduct	0.260	0.260	0.360	0.360	0.360	0.360	0.240	0.290	0.260	0.260	0.290	0.360	0.360	0.360
Density	0.101	0.101	0.097	0.097	0.097	0.097	0.094	0.102	0.101	0.101	0.100	0.097	0.097	0.097
NOTES														
Chemical specifications are in percents. Strength numbers in 1000's pounds.														
Characteristics are graded A= Excelent, B= Good, C= Average, D= Fair, F= Poor.														
Sand = Sand casting, Perm = Permanent mold casting.														

This lists the most common aluminum alloys cast. For special requirements contact
ACE FOUNDRY