Alloy	#3	#5	#7	#2	ZA-8		ZA-12			ZA-27			
Mechanical Properties	Die Cast	Die Cast	Die Cast	Die Cast	Sand Cast	Perm Mold	Die Cast	Sand Cast	Perm Mold	Die Cast	Sand Cast	Sand Cast HT'	Die Cast
Ultimate Tensile Strength: pi y 10' (Map)	41 (283)	48(328)	41 (283)	52(359)	38(263)	32-37 (221-255)	54(374)	40-46 (276-317)	45-50 (310-345)	58(400)	58-64 (400-441)	45-47 (310-324)	61 (421)
Yield Strength - 0.2% Offset: pi y 10' (Map)	32(221)	33(228)	32(221)	-	29(200)	30(206)	42(290)	31 (214)	39(269)	46(317)	54(372)	37(255)	55(379)
Elongation: % in 2"	10	7	13	7	1-2	1-2	6-10	1-3	1-3	4-7	3-6	8-11	1-3
Shear Strength: pi x 10' (Map)	31 (214)	38(262)	31 (214)	46(317)		35(241)	40(275)	37(255)		43(296)	42(290)	33(228)	47(325)
Hardness: Brittle	82	91	80	100	85	85-90	95-110	89-105	89-105	95-115	110-120	90-110	105-125
Impact Strength: ft-lb (J)	43-(58)	48' (65)	43 ' (58)	35` (48)	15` (20)		31' (42)	19' (25)		21' (29)	35' (47)	43' (58)	9' (5)
Fatigue Strength Rotary Bend - 500 ' cycles pi y 10' (Map)	6.9(48)	8.2 (57)	6.8(47)	8.5(59)		7.5(52)	15(103)	' 5C103)		17(117)	25(172)	15(103)	21 (145)
Compressive Yield Strength -0.1 % Offset pi x 10' (Map)	60' (414)	87' (600)	60' (414)	93' (641)	29(199)	31 (214)	37(252)	33(227)	34(234)	39(269)	48(331)	37(255)	52(385)
Modules of Elasticity - psi r			12-4 (85.5)	12.4'(85 5)	12.4 (85.5)	12.4' (85.5)			12.0'(82.7)			11.3' (77.9)	
Physical Properties													
Density lb/ce in (g/cm3	24(6.6)	.24 (6.6)	.24 (6.6)	.24 (6.6)		0.227 (6.3)			0.218 (6.0)			0.181 (5.0)	
Melting Range: 'F (C)	718-728 (381-387)	717-727 (380-386)	718-728 (381-387)	715-734 (379-390)		707-759 (375-404)			710-810 (377-432)			708-903 (376-484)	
Electrical Conductivity: % VACS	27	26	27	25		27.7			28.3			29.7	
Thermal Conductivity: BTU/ft/hr/'F (W/m/hr/°C)	65.3 (113.0)	62.9 (108,9)	65.3 (113.0)	60.5 (104.7)		66.3 (114.7)			67.1 (116.1)			72.5 (125.5)	
Coefficient of Thermal Expansion 68-2127 pin/in/'F (100-200'C pm/mm/'C)	15.2 (27.4)	15.2 (27.4)	15.2 (27.4)	15.4 (27.8)		12.9 (23.3)			13.4 (24.2)			14.4 (26.0)	
Specific Heat: BTU/lb/ "F (J/kg/ "C)	. 10 (419)	10(419)	.10 (419)	. 10 (419)		. 104 (435)			. 107 (448)			.125 (534)	
Pattern or Die Shrinkage: Indian	.007	.007	.007	.007		1/8 in/ft .007		1/8 ir/ft	5/32 in/ft	.0075	5/32 in/ft	5/32 in/ft	.008
Chemical Specifications													
(per ASST.) (% by weigh)	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting
Al	3.9-4.3	3.5-4.3	3.9-4.3	3.5-4.3	3.9-4.3	3.5-4.3	3.9-4.3	3.5-4.3	8.2-8.8	&0-8.8	10.8-11.5	10.5-11.5	25.5-28.0	25.0-28.0
Mg	.025-05	.020-.05	.03-.06	.03-.08	.01-,020	.005-,020	.025-.05	.020-.050	.020-.030	.015-.030	.020-.030	.015-.030	.012-.020	010-,020
Cu	. 10 may	.25 may"	.75-1.25	.75-1.25	.10 may	. 25 may	2.6-2.9	2.5-3.0	0.8-1.3	.8-1.3	0.5-1.2	0.5-1.2	2.0-2.5	2.0-2.5
Fe (may)	.075	.10	.075	. 10	.075	075	.075	.10	.065	.075	.065	.075	.072	.075
Pb(max)	004	.005	.004	.005	.0020	003	.004	.005	.005	006	.005	.006	005	.006
Cd (may)	.003	.004	.003	.004	.0020	002	.003	.004	.005	.006	.005	.006	. 005	.006
Sun (may)	.002	.003	002	003	.0010	001	.002	.003	.002	.003	.002	.003	.002	.003
Nix (other)''	-			-	.005-.020	.005-.020	-							
ii	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance
Industry Standards	Ingot	Casting	Ingot	Casting	logot'	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting	Ingot	Casting
ASST.	B240 AG40A	B86 AG40A	B240 AC41A	B86 AC41A	B240 AG40B	886 AG40B	B240 AC43A	B86 AC43A	B669 (8240)	8791 (886)'	B669 (240) y	B79 (886) '	B669 (8240)'	B86 (8791) '
SAE	J468B 903	J468B 903	J468B 925	J468B 925			Former 921							
USN	Z33521	Z33520	Z35530	Z35531	Z33522	Z33523	Z35540	Z35541	Z35635	Z35636	Z35630	Z35631	Z35840	Z35841

3 hr at 610 F and furnace cool. '1/4' square specimen untouched 10 mm square specimen untouched Comprehensive strength 'Previous industry accepted standard. "Estimated values to be confirmed by research.

' Values for permanent mold condition which should be similar for other processes except for ZA-27 Sand Cast Heat Treat (HT).

" Revision o standard anticipated 1998.

' Per ASST. 886-88, ` For the majority o commercial applications, a copper content in the range of 0.25 to 0.75% will not adversely affect the serviceability o die castings and should not serve as a basis for rejection. `

Zamak alloy ingot for die casting (with the exception of % Nix in 1·103) may contain Nix, Kr, Mn, Six, in amounts of up to 0.02, 0.02, 0.06 and 0,035% respectively.

2# Ingot for foundry and pressure die casting may contain Nix, Kr, or Mn in amounts of up to 0.01% each or 0,03% total.