

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Si 7 Mg**

Alloy designation: **EN AB and AC 42000 - Al Si 7 Mg**

Replaces: **UNI 3599 - G Al Si 7 Mg**

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												Individual impurities	Global impurities
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti			
EN AB 42000	min	6,5				0,25						0,05			
	max	7,5	0,45	0,15	0,35	0,65	-	0,15	0,15	0,15	0,05	0,20	0,05	0,15	
UNI 3599	min	6,5			0,40	0,30						0,10			
	max	7,5	0,5	0,05	0,6	0,45	-	0,05	0,05			0,20		0,15*	

*Exc.Fe

MECHANICAL FEATURES DETECTED FROM SEPARATE CASTING TEST SPECIMENS

Casting process	Temper designations	Rm Tensile strenght		Sp 0,2 Yield strenght		A Elongation		HB Brinell hardness	
		EN 1706	UNI 3599	EN 1706	UNI 3599	EN 1706	UNI 3599	EN 1706	UNI 3599
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast)	F	140	145-165	80	100-120	2	2-3	50	55-70
	T6	220	215-245	180	175-205	1	2-3	75	70-90
SHELL (as cast)	F	170	165-195	90	110-125	2,5	4-6	55	65-80
	T6	260	255-295	220	175-205	1	6-10	90	90-110
	T64	240	-	200	-	2	-	80	-
PRESSURE DIE (as cast)									

PHYSICAL PROPERTIES (indicative values subject to the UNI EN and ex UNI Standards)

DENSITY	2.68 Kg/dm ³
MELTING RANGE or MELTING POINT	559 °C 620 °C
SPECIFIC HEAT (at 100)°	0.23 cal/g °C
LATENT HEAT OF MELTING	93 cal/g
LINEAR SHRINKAGE	~1.20 %
ELECTRIC CONDUCTIVITY	19 - 25 MS/m
MODULUS OF ELASTICITY	7400 Kg/mm ²

THERMAL CONDUCTIVITY at 20°C	150 - 170 W/(m K)
LINEAR THERMAL EXPANSION from 20 t 100°C	21.6x10-6/°C
LINEAR THERMAL EXPANSION from 20 t 200°C	22.6x10-6/°C
LINEAR THERMAL EXPANSION from 20 t 300°C	23.4x10-6/°C
SUGGESTED MAXIMUM TEMPERATURE	780 °C
SUGGESTED CASTING TEMPERATURE	
°in sand	690-740 °C
°in shell	680-730 °C
°in pressure die	-

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

STRENGTH AT ELEVATED TEMPERATURE(to 200°C)	MEDIUM
GENERAL RESISTANCE TO CORROSION	SUFFICIENT
MACHINABILITY	MEDIUM
CASTABILITY	GOOD
POLISHING	MEDIUM

RESISTANCE TO HOT TEARING	SMALL
PRESSURE TIGHTNESS	GOOD
WELDABILITY	GOOD
DECORATIVE ANODISING	MEDIUM
PROTECTIVE ANODISING	SUFFICIENT

COMPARISON WITH EQUIVALENT OR SIMILAR FOREIGN STANDARDS

	ITALY	GERMANY	FRANCE	G.B.R.	USA	ISO	JAPAN	TURKEY
	UNI	(Din1725/5-86)	(NFA57-105)	(BS1490-88)	(ASTM B179-82)	(3522-84)	(JIS H2211-92)	(ETIAL)
Equivalent	3599		AS 7 G	LM 25	356.1	Al Si 7 Mg	AC 4 C	
Similar	8024	GAISI7Mg		(L 99)	SAE 323			L-2652

HEAT TREATMENTS

Water quenching (hot for particularly complex casting) from 530-550°C after pre-heating of at least 12 hours for sand casting and at least 8 hours for shell casting. Artificial aging

155 - -170°C for 4 - -12 hours in normal conditions.

Stabilisation at 350-390 °C for 4-8 hours in normal conditions.