

Standard: **UNI EN 1676 and 1706**

 Alloy group: **Al Si (Cu)**

 Alloy designation: **EN AB and AC 47000 - Al Si 12 (Cu)**

 Replaces: **UNI 7369/2 - SG Al Si 1°**
**CHEMICAL COMPOSITION %**

ALLOY		ELEMENTS											Individual impurities	Global impurities
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti		
EN AB 47000	min	10,5			0,05									
	max	13,5	0,70	0,90	0,55	0,35	0,10	0,30	0,55	0,20	0,10	0,15	0,05	0,25
UNI 7369/2	min	11,5			0,20									
	max	13,5	0,8	0,80	0,4	0,30	-	0,30	0,50	0,15	0,10	0,15		1.2*

**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 7369/2	EN 1706	UNI 7369/2	EN 1706	UNI 7369/2	EN 1706	UNI 7369/2
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast)	F	150	145-175	80	100-120	1	1-1,5	50	50-65
SHELL (as cast)	F	170	175-215	90	100-130	2	2-5	55	60-75
PRESSURE DIE (as cast)									

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

DENSITY	2.65 Kg/dm <sup>3</sup>
MELTING RANGE or MELTING POINT	570 °C 590 °C
SPECIFIC HEAT (at 100)°	0.23 cal/g °C
LATENT HEAT OF MELTING	93 cal/g
LINEAR SHRINKAGE	~0.8 %
ELECTRIC CONDUCTIVITY	16 - 22 MS/m
MODULUS OF ELASTICITY	7600 Kg/mm <sup>2</sup>

THERMAL CONDUCTIVITY at 20°C	130 - 150 W/(m K)
LINEAR THERMAL EXPANSION from 20 t 100°C	
LINEAR THERMAL EXPANSION from 20 t 200°C	20.5x10-6/°C
LINEAR THERMAL EXPANSION from 20 t 300°C	
SUGGESTED MAXIMUM TEMPERATURE	750 °C
SUGGESTED CASTING TEMPERATURE	
°in sand	640-700 °C
°in shell	670-730 °C
°in pressure die	

**TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS**

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

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

**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	SGAlSi12Cu1	231 A	AS 12 U	LM 2				
Similar	5079	231 D		(LM 20)	A 413.1		AC 7 A	

**HEAT TREATMENTS**

Heat treatments are not usually performed on this alloy, however to improve the R-S-HB it is possible to perform quenching at 510°C in water followed by prolonged artificial aging at 160°C for 18 hours.