



RAFFMETAL

THE ALUMINIUM EVOLUTION



Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Si Mg Ti**

Alloy designation: **EN AB and AC 41000 - Al Si 2 Mg Ti**

Replaces: **UNI 3055 - G Al Si 2 Mn Mg**

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												Individual impurities	Global impurities
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti			
EN AB 41000	min	1,6			0,30	0,50						0,07			
	max	2,4	0,50	0,08	0,50	0,65	-	0,05	0,10	0,05	0,05	0,15	0,05	1,15	
UNI 3055	min	1,8			0,60	0,55									
	max	2,3	0,5	0,05	0,8	0,75	-	0,01	0,05			0,15		0.1*	

*Exc.Fe+Ti

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 3055	EN 1706	UNI 3055	EN 1706	UNI 3055	EN 1706	UNI 3055
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast)	F	140	120-175	70	80-125	3	1.0-3.0	50	50-70
	T6	240	215-295	180	195-245	3	1.0-2.5	85	80-100
SHELL (as cast)	F	170	125-195	70	100-150	5	1.0-5.0	50	50-80
	T6	260	245-295	180	195-275	5	1.0-3.0	85	90-105
PRESSURE DIE (as cast)									

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

DENSITY	2.70 Kg/dm ³
MELTING RANGE or MELTING POINT	550 °C 640 °C
SPECIFIC HEAT (at 100)°	0.23 cal/g °C
LATENT HEAT OF MELTING	93 cal/g
LINEAR SHRINKAGE	~1.35 %
ELECTRIC CONDUCTIVITY	19 - 25 MS/m
MODULUS OF ELASTICITY	7200 Kg/mm ²

THERMAL CONDUCTIVITY at 20°C	140 - 160 W/(m K)
LINEAR THERMAL EXPANSION from 20 t 100°C	23.0x10-6/°C
LINEAR THERMAL EXPANSION from 20 t 200°C	23.5x10-6/°C
LINEAR THERMAL EXPANSION from 20 t 300°C	24.0x10-6/°C
SUGGESTED MAXIMUM TEMPERATURE	
SUGGESTED CASTING TEMPERATURE	
°in sand	680-720 °C
°in shell	680-720 °C
°in pressure die	

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

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

AZIENDA CON SISTEMA DI GESTIONE PER LA QUALITÀ CERTIFICATO DA DNV = UNI EN ISO 9001:2008 =

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AZIENDA CON SISTEMA DI GESTIONE AMBIENTALE CERTIFICATO DA DNV = UNI EN ISO 14001:2004 =



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GENERALITIES REGARDING USE

The ingot recasting process must be carried out as quickly as possible and overheating must be avoided (maximum melting temperature 750°C).

The iron tools that can come into contact with the liquid metal must be appropriately painted to prevent contamination of the alloy.

The best results for refining the alloy are reached by treatments with inert gases such as nitrogen and/or argon with the intent of removing the hydrogen dissolved and the oxides present in the bath of molten metal. Better distribution of the gas in the molten metal is obtained by the use of relevant rotors. Pay particular attention that all transfer operations of the molten metal are performed with less turbulence possible. It is recommended to leave the molten metal at rest for a few minutes before starting casting. Careful skimming operations of the bath are recommended.

The re-cycling of risers and casting appendices is allowed but within the limits of 40% of the total weight of the load.

SPECIFICITY REGARDING USE

The important level of the Magnesium in the alloy recommends fast melting of the ingots in order to reduce the loss of the same, the oxidation of the melted metal and the absorption of hydrogen.

If casting must be produced for heat treatment, the loss of magnesium during melting of the metal must be considered (about 0.05 % for each melting process), the integration of this element is therefore recommended to guarantee the effective heat treatment.

Considering the relative level of purity of the alloy's chemical composition (reduced content of Cu - Zn) it is important to consider the level of cleanliness of the melting furnaces and the attention of the re-cycling of the risers in order to prevent induced pollution that could jeopardise the technical properties of the alloy.

The Sodium or Strontium-based modification treatment is recommended as the alloy has a low percentage of Silicone.

TYPICAL USE

Alloy suitable for the realisation of casting resistant to corrosion and suitable for anodic oxidation and welding. Used in the chemical industry and the furniture industry. It is susceptible to hardening and tempering

EN 41000 alloy is in compliance with the EN 601 foodstuff Standard.

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	SA-3551,1							
Similar								

HEAT TREATMENTS

Water quenching from 520-540°C after pre-heating in normal conditions for 2 - 4 hours.

Artificial Aging 155 - 165°C for 8 - 12 hours in normal conditions.

Annealing 330 - 370 °C for 4 - 8 hours in normal conditions.

Limitation of liability

The contents of these technical sheets have an informative purpose and do not constitute a warranty regarding the properties stated. The decisions based on this information are taken under the responsibility and risk of the user and do not exclude it from the verification. If the former are not carried out, we do not assume any liability.

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