



RAFFMETAL

THE ALUMINIUM EVOLUTION



Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Mg**

Alloy designation: **EN AB and AC 51200 - Al Mg 9**

Replaces: **DIN 349**

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Individual impurities	Global impurities
EN AB 51200 - Al Mg 9	min		0,45			8,5								
	max	2,5	0,9	0,08	0,55	10,5	-	0,10	0,25	0,10	0,10	0,15	0,05	0,15
	min													
	max													

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	DIN1725	EN 1706	DIN1725	EN 1706	DIN1725	EN 1706	DIN1725
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast) Annealed									
SHELL (as cast) Annealed									
PRESSURE DIE (as cast)	F	200	200 - 300	130	140 - 220	1	1 - 5	70	70 - 100

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

DENSITY	2.63 Kg/dm ³	THERMAL CONDUCTIVITY at 20°C	60 - 90 W/(m K)
MELTING RANGE or MELTING POINT	520 °C 620 °C	LINEAR THERMAL EXPANSION from 20 t 100°C	-
SPECIFIC HEAT (at 100)°	0.94 J/Gk	LINEAR THERMAL EXPANSION from 20 t 200°C	25.0-10-6/°C
LINEAR SHRINKAGE IN SAND PROCESS		LINEAR THERMAL EXPANSION from 20 t 300°C	-
LINEAR SHRINKAGE IN SHELL PROCESS		SUGGESTED MAXIMUM TEMPERATURE	740 °C
LINEAR SHRINKAGE IN HIGH PRESSURE	0.5 - 0.8 %	SUGGESTED CASTING TEMPERATURE	
ELECTRIC CONDUCTIVITY	11 - 14 MS/m	°in sand	
MODULUS OF ELASTICITY	6800 Kg/mm ²	°in shell	
		°in pressure die	640 - 680 °C

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

STRENGTH AT ELEVATED TEMPERATURE(to 200°C)	GOOD	RESISTANCE TO HOT TEARING	MEDIUM
GENERAL RESISTANCE TO CORROSION	EXCELLENT	PRESSURE TIGHTNESS	MEDIUM
MACHINABILITY	EXCELLENT	WELDABILITY	INSUFFICIENT
CASTABILITY	SUFFICIENT	DECORATIVE ANODISING	GOOD
POLISHING	EXCELLENT	PROTECTIVE ANODISING	

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 740°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 appendixes is allowed but within the limits of 40% of the total weight of the load.

SPECIFICITY REGARDING USE

As it is a Magnesium-based alloy, fast melting of the ingots is recommended 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 0.1% 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 check 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.

TYPICAL USE

Alloy for high pressure casting with excellent resistance to corrosion, polishing and machinability. Components such as handles that do not undergo anodic oxidation, domestic appliances, optical industry, etc.

Alloy EN 51200 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		DIN 349	A G 10 S	LM 10	518.1	-	-	-
Similar	UNI 5080							-

HEAT TREATMENTS

Limitation of liability

The contents of these technical sheets gave 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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