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 51500 - Al Mg 5 Si2 Mn**

Replaces:

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Ni**	**Zn**	**Pb**	**Sn**	**Ti**	Individual impurities	Global impurities
EN AB 51500	min	1,8			0,4	5,0								
	max	2,6	0,20	0,03	0,8	6,0	-	-	0,07	-	-	0,20	0,05	0,15
	min	1,8			0,50	5,00						0,05		
	max	2,6	0,15	0,02	0,80	6,00	-	-	0,07	-	-	0,15	0,02	0,15

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		EN 1706		EN 1706		EN 1706	
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast)									
Annealed									
SHELL (as cast)									
Annealed									
PRESSURE DIE (as cast)	F	250	250 - 280	140	130 - 175	5	9 - 16	70	75 - 95

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

DENSITY	2.65 Kg/dm³
MELTING RANGE or MELTING POINT	580 °C 618 °C
SPECIFIC HEAT (at 100)°	
LINEAR SHRINKAGE IN SAND	
LINEAR SHRINKAGE IN SHELL PROCES	
LINEAR SHRINKAGE IN HIGH PRESSUR	0.6 - 1.1 %
ELECTRIC CONDUCTIVITY	15 - 21 MS/m
MODULUS OF ELASTICITY	70 - 80 Gpa

THERMAL CONDUCTIVITY at 20°C	110 - 130 W/(m K)
LINEAR THERMAL EXPANSION from 20 t 100°C	-
LINEAR THERMAL EXPANSION from 20 t 200°C	24.0-10-6/°C
LINEAR THERMAL EXPANSION from 20 t 300°C	-
SUGGESTED MAXIMUM TEMPERATURE	770 °C
SUGGESTED CASTING TEMPERATURE	
°in sand	
°in shell	
°in pressure die	650 - 730 °C

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

RESISTANCE TO HOT TEARING	MEDIOCRE
PRESSURE TIGHTNESS	MEDIOCRE
WELDABILITY	GOOD
DECORATIVE ANODISING	T RECOMMEND
PROTECTIVE ANODISING	T RECOMMEND

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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Group: **Al Mg**

Designation: **EN AB and AC 51500 - Al Mg 5 Si2 Mn**

Replaces:

GENERALITIES REGARDING USE

The ingot recasting process must be carried out as quickly as possible and overheating must be avoided (maximum melting temperature 770°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

High pressure casting alloy with low Fe content. The long solidification interval ensures good mould filling. The tendency to break due to heat is low. In spite of the low iron contents, the alloy does not tend to stick to the moulds. Thanks to the presence of manganese, the casting wall spacers can be well-formed/modelled. According to the thickness of the casting wall, excellent mechanical properties can be reached without heat treatment. In particular, the high ductility rendered by the walls of the casting should be emphasised. The alloy is resistant to corrosion and is particularly suitable for welding.

TYPICAL USE

The alloy can be used anywhere high ductility and good resistance are requested without performing heat treatment. Examples are the safety parts in engineering vehicles (parts of the chassis, pressure tanks, car seats, structural parts).

Alloy EN 51500 **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								
Similar								

HEAT TREATMENTS

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