RAFFMETAL

THE ALUMINIUM EVOLUTION

Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Si Cu Ni Mg**

Alloy designation: **EN AB and AC 48100 - Al Si 17 Cu 4 Mg**

Replaces:

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Ni**	**Zn**	**Pb**	**Sn**	**Ti**	Individual impurities	Global impurities
EN AB48100	min	16,0		4,00		0,45								
	max	18,0	1,00	5,00	0,50	0,65	-	0,30	1,50	-	0,30	-	0,05	0,25
	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		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	220	-	160	-	1		90	

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

DENSITY	**2.73 Kg/dm³**
MELTING RANGE or MELTING POINT	**510 °C** **640 °C**
SPECIFIC HEAT (at 100)°	**0.90 J/Gk**
LINEAR SHRINKAGE IN SAND PROCESS	
LINEAR SHRINKAGE IN SHELL PROCESS	
LINEAR SHRINKAGE IN HIGH PRESSURE F	**0.3 - 0.5%**
ELECTRIC CONDUCTIVITY	**24 MS/m**
MODULUS OF ELASTICITY	**8000 Kg/mm²**

THERMAL CONDUCTIVITY at 20°C	**140 - 190 W/(m K)**
LINEAR THERMAL EXPANSION from 20 t 100°C	**-**
LINEAR THERMAL EXPANSION from 20 t 200°C	**18.0-10-6/°C**
LINEAR THERMAL EXPANSION from 20 t 300°C	**-**
SUGGESTED MAXIMUM TEMPERATURE	**780 °C**
SUGGESTED CASTING TEMPERATURE	
°in sand	
°in shell	
°in pressure die	**680 - 740 °C**

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

RESISTANCE TO HOT TEARING	**CORRECT**
PRESSURE TIGHTNESS	**GOOD**
WELDABILITY	**MEDIOCRE**
DECORATIVE ANODISING	**OT RECOMMENDE**
PROTECTIVE ANODISING	**OT RECOMMENDE**

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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Replaces:

GENERALITIES REGARDING USE

The ingot recasting process must be carried out as quickly as possible and overheating must be avoided (maximum melting temperature 780°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

The important level of the Magnesium in the alloy recommends fast meting 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.

TYPICAL USE

Hypereutectic AlSi alloy with high resistance to wear. Excellent mechanical features also at high temperatures. Reduced resistance to corrosion due to the high copper content.
Used for the realisation of casting undergoing extreme wear, engine cylinder heads with several cylinders for the car and naval industries.

Alloy EN 48100 **is not 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		-			B390.0		ADC14	-

HEAT TREATMENTS

Stabilisation (T5) - 225 - 235°C for 7 - 9 hours at normal conditions, air cooled.

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