RAFFMETAL

THE ALUMINIUM EVOLUTION

Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Cu**

Alloy designation: **EN AB and AC 21200 Al CU 4 Mn Mg**

Replaces:

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Ni**	**Zn**	**Pb**	**Sn**	**Ti**	Individual impurities	Global impurities
EN AB 21100	min			**4,00**	**0,20**	**0,20**								
	max	**0,1**	**0,15**	**5,00**	**0,50**	**0,50**	**-**	**0,03**	**0,05**	**0,03**	**0,03**	**0,05**	**0,03**	**0,10**
	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)	**T4**	**330**		**225**			**3**		
cooling from casting and aging									
SHELL (as cast)	**T4**	**400**		**240**			**8**		
cooling from casting and aging	**T7**	**410**		**325**			**5**		
PRESSURE DIE (as cast)									

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

DENSITY	**2.79 Kg/dm³**
MELTING RANGE or MELTING POINT	**540 °C** **650 °C**
SPECIFIC HEAT (at 100)°	**0.91 J/Gk**
LINEAR SHRINKAGE IN SAND	**1.1 - 1.5 %**
LINEAR SHRINKAGE IN SHELL PROCES	**0.9 - 1.2 %**
ELECTRIC CONDUCTIVITY	**16 - 23 MS/m**
MODULUS OF ELASTICITY	**7200 Kg/mm²**

THERMAL CONDUCTIVITY at 20°C	**120 - 150 W/(m K)**
LINEAR THERMAL EXPANSION from 20 t 100°C	
LINEAR THERMAL EXPANSION from 20 t 200°C	**23.0-10-6/°C**
LINEAR THERMAL EXPANSION from 20 t 300°C	
SUGGESTED MAXIMUM TEMPERATURE	**750 °C**
SUGGESTED CASTING TEMPERATURE	
°in sand	**700 - 750 °C**
°in shell	**700 - 730 °C**
°in pressure die	

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

RESISTANCE TO HOT TEARING	**MEDIUM**
PRESSURE TIGHTNESS	**MEDIUM**
WELDABILITY	**CORRECT**
DECORATIVE ANODISING	**CORRECT**
PROTECTIVE ANODISING	**CORRECT**

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

SPECIFICITY REGARDING USE

With this type of alloy, many defects in the casting produced derive from “Contamination” with Silicon.
Excess Silicone in the alloy increases the susceptibility to heat cracking in the casting solidification phase.
The Silicone content must be kept as low as possible and always at values lower than Values for Iron.

Considering the relative level of purity of the alloy's chemical composition (reduced content of Si - Zn - Fe) 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.

TYPICAL USE

Alloy **not in compliance with the EN 601**food 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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