



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 21100 Al Cu 4 Ti**

Replaces:

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Individual impurities	Global impurities
EN AB 21100	min			4,2								0,15		
	max	0,15	0,15	5,2	0,55	-	-	-	0,07	-	-	0,25	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)	T6	300	430 - 475	200	360 - 400	3	3 - 4	95	125 - 140
	T64	280	300 - 360	180	200 - 240	5	8 - 12	85	90 - 100
SHELL (as cast)	T6	330	450 - 475	220	360 - 400	7	4 - 7	95	130 - 140
	T64	320	360 - 400	180	190 - 230	8	17 - 23	90	90 - 110
PRESSURE DIE (as cast)									

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

DENSITY	2.79 Kg/dm ³	THERMAL CONDUCTIVITY at 20°C	1.1 - 1.4 W/cmK
MELTING RANGE or MELTING POINT	540 °C 650 °C	LINEAR THERMAL EXPANSION from 20 t 100°C	
SPECIFIC HEAT (at 100)°	0.91 J/Gk	LINEAR THERMAL EXPANSION from 20 t 200°C	23.0-10-6/°C
LINEAR SHRINKAGE IN SAND PROCESS	1.1 - 1.5 %	LINEAR THERMAL EXPANSION from 20 t 300°C	
LINEAR SHRINKAGE IN SHELL PROCESS	0.9 - 1,2 %	SUGGESTED MAXIMUM TEMPERATURE	750 °C
ELECTRIC CONDUCTIVITY	16 - 23 MS/m	SUGGESTED CASTING TEMPERATURE	
MODULUS OF ELASTICITY	7200 Kg/mm ²	°in sand	700 - 750 °C
		°in shell	700 - 730 °C
		°in pressure die	

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

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 with extreme load, yield load and combine hardness with excellent lengthening values. Modifying aging, the features can be varied within wide limits. Mechanical Constructions limited corrosion resistance, transport and textile industries, armaments industry

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		220 / 1	A U 5 G T		204.2	AlCu 4 MgTi		
Similar					201.2			

HEAT TREATMENTS

T6 - Liquefaction from 520 to 535 °C for 8 - 16 hours - Aging temperature from 160 to 175 °C for 6 - 7 hours.
T64 - Liquefaction from 520 to 535 °C for 8 - 10 hours - Aging temperature from 130 to 145 °C for 6 - 7 hours.

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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