RAFFMETAL

THE ALUMINIUM EVOLUTION

Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Si 5 Cu**

Alloy designation: **EN AB and AC 45200 Al Si 5 Cu 3 Mn**

Replaces: **LM 4**

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Ni**	**Zn**	**Pb**	**Sn**	**Ti**	Individual impurities	Global impurities
EN AB 45200	min	4,5		2,50	0,20									
	max	6,0	0,70	4,00	0,55	0,40	-	0,30	0,55	0,20	0,10	0,15	0,05	0,25
LM 4	min	4,0		2,00	0,20									
	max	6,0	0,80	4,00	0,60	0,20	-	0,30	0,50	0,10	0,10	0,20	0,05	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	BS 1490:88	EN 1706	BS 1490:88	EN 1706	BS 1490:88	EN 1706	BS 1490:88
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast)	F	140	140 - 170	70	70 - 110	1	2 - 3	60	65 - 80
Hardened and Aged artif.	T6	230	230 - 290	200	200 - 300	1	0 - 2	90	90 - 120
SHELL (as cast)	F	160	160 - 220	80	80 - 110	1	2 - 4	70	70 - 90
Hardened and Aged artif.	T6	280	280 - 370	230	200 - 300	1	1 - 5	90	90 - 120
PRESSURE DIE (as cast)									

PHYSICAL PROPERTIES (indicative values subject to the UNI EN and ex BS 1490l Standards)

DENSITY	2.75 Kg/dm³
MELTING RANGE or MELTING POINT	520 ℃ 620 ℃
SPECIFIC HEAT (at 100)°	0.91 J/Gk
LATENT HEAT OF MELTING	
LINEAR SHRINKAGE IN SHELL PROCES	˜1.30 %
ELECTRIC CONDUCTIVITY	15 - 19 MS/m
MODULUS OF ELASTICITY	7200 Kg/mm²

THERMAL CONDUCTIVITY at 20°C	120 - 130 W/(m K)
LINEAR THERMAL EXPANSION from 20 t 100℃	-
LINEAR THERMAL EXPANSION from 20 t 200℃	22.0-10-6/°C
LINEAR THERMAL EXPANSION from 20 t 300℃	-
SUGGESTED MAXIMUM TEMPERATURE	780 ℃
SUGGESTED CASTING TEMPERATURE	
°in sand	-
°in shell	670 - 740 ℃
°in pressure die	-

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

RESISTANCE TO HOT TEARING	SMALL
PRESSURE TIGHTNESS	GOOD
WELDABILITY	LOW
DECORATIVE ANODISING	MEDIUM
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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Alloy group: **Al Si 5 Cu**

Alloy designation: **EN AB and AC 45200 Al Si 5 Cu 3 Mn**

Replaces: **LM 4**

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 EN 45200 is relatively easy to use and therefore requires general attention that characterise the foundry aluminium alloys.

TYPICAL USE

Alloy particularly indicated for the realisation of parts for the car industry and engineering in general.

Alloy EN 45200 **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			AS 5 U 3 G	LM 4	308.1		AC2A.1	
Similar	UNI 3052				308.2			

HEAT TREATMENTS

Hardening 490 - 510 °C after pre-heating of 2 - 4 hours in normal conditions Complete Artificial Aging at 150 - 175 °C for 8 - 12 hours.

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