



RAFFMETAL

THE ALUMINIUM EVOLUTION



Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Si**

Alloy designation: **EN AB and AC 44300 Al Si 12 (Fe)(a)**

Replaces: **DIN 230 D - GD Al Si 12**

CHEMICAL COMPOSITION %

ALLOY		ELEMENTS												
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Individual impurities	Global impurities
EN AB 44300	min	10,5	0,45											
	max	13,5	0,90	0,08	0,55	-	-	-	0,15	-	-	0,15	0,05	0,25
DIN 230 D - GD Al Si 12	min	10,5												
	max	13,5	1,00	0,10	0,4	-	-	-	0,15	-	-	0,15	0,05	0,25

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	DIN 1725	EN 1706	DIN 1725	EN 1706	DIN 1725	EN 1706	DIN 1725
		Mpa	N/mm2	Mpa	N/mm2	%	%	HBW	HB
SAND (as cast)			-		-		-		-
			-		-		-		-
SHELL (as cast)			-		-		-		-
			-		-		-		-
PRESSURE DIE (as cast)	F	240	220 - 280	130	140 - 180	1	1 - 3	60	60 - 100

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

DENSITY	2.68 Kg/dm ³
MELTING RANGE or MELTING POINT	570 °C 580 °C
SPECIFIC HEAT (at 100)°	0.90 J/Gk
LATENT HEAT OF MELTING	
LINEAR SHRINKAGE IN HIGH PRESSUR	0.4 - 0.6 %
ELECTRIC CONDUCTIVITY	16 - 22 MS/m
MODULUS OF ELASTICITY	7500 Kg/mm ²

THERMAL CONDUCTIVITY at 20°C	130 - 160 W/(m K)
LINEAR THERMAL EXPANSION from 20 t 100°C	20 10-6/°K
LINEAR THERMAL EXPANSION from 20 t 200°C	21-10-6/K
LINEAR THERMAL EXPANSION from 20 t 300°C	-
SUGGESTED MAXIMUM TEMPERATURE	740 °C
SUGGESTED CASTING TEMPERATURE	
°in sand	-
°in shell	-
°in pressure die	640 - 680

TECHNOLOGICAL FEATURES, QUALITATIVE INDICATIONS

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

RESISTANCE TO HOT TEARING	SMALL
PRESSURE TIGHTNESS	MEDIUM
WELDABILITY	MEDIUM
DECORATIVE ANODISING	LOW
PROTECTIVE ANODISING	

AZIENDA CON SISTEMA DI GESTIONE PER LA QUALITÀ CERTIFICATO DA DNV
= **UNI EN ISO 9001:2008** =

Raffmetal S.p.a.
via malpaga, 82 25070 Casto (BS)
tel:0365.890.100 fax 0365.899.327
qualita@raffmetal.it
vendite@raffmetal.it

AZIENDA CON SISTEMA DI GESTIONE AMBIENTALE CERTIFICATO DA DNV
= **UNI EN ISO 14001:2004** =



RAFFMETAL

THE ALUMINIUM EVOLUTION



Leghe di alluminio in colata continua. Continuous casting aluminium alloys

Standard: **UNI EN 1676 and 1706**

Alloy group: **Al Si**

Alloy designation: **EN AB and AC 44300 Al Si 12 (Fe)(a)**

Replaces: **DIN 230 D - GD Al Si 12**

GENERALITIES REGARDING USE

The ingot recasting process must be carried out as quickly as possible and overheating must be avoided (maximum melting temperature 740°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 EN 44300 alloy is delivered by RAFFMETAL exclusively under the form of ingots produced with Continuous Casting, this has the following advantages:

- Lower presence of oxides with consequent reduced aptitude for the formation of HARD POINTS
- Fine and even structure with reduced quantity and dimension intermetallic compounds
- Reduced hydrogen content in relation to the high solidification speed.
- Possibility of customising according to different options of the dimensions and geometry of the stack
- Less risk of explosion of the ingot in the melting phase owing to the smaller presence of open shrinkage cavities.
- Improved metal yield owing to the excellent surface quality of the ingot

SPECIFICITY REGARDING USE

This alloy is proposed among the most classical Aluminium-Silicone eutectic suitable for the pressurised casting process, with relatively important purity features and therefore it is fundamental always to pay attention so that the melting furnaces and tools used in contact with the liquid metal are clean. Attention must be paid to quality and quantity (not over 50% of the load) of the risers recycled, over which the alloy does not have particular criticalities linked to the chemical composition. The use of any "modification" treatments is exceptional and must be evaluated with great attention considering the coupling with the high pressure casting.

Considering the relative level of purity of the alloy's chemical composition (reduced content of Cu - Zn) 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 used for the production of castings with complex shapes in pressurised casting mode with good mechanical features joined with a good resistance to corrosion.

EN 44300 alloy 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		230 D	AS 12					
Similar	4514	230 A		LM 20	413.2			ETIAL - 141

HEAT TREATMENTS

It is not envisioned and the chemical composition of the alloy does not allow particular response to the heat treatment

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.

**AZIENDA CON SISTEMA DI GESTIONE
PER LA QUALITÀ CERTIFICATO DA DNV
= UNI EN ISO 9001:2008 =**

Raffmetal S.p.a.
via malpaga, 82 25070 Casto (BS)
tel:0365.890.100 fax 0365.899.327
qualita@raffmetal.it
vendite@raffmetal.it

**AZIENDA CON SISTEMA DI GESTIONE
AMBIENTALE CERTIFICATO DA DNV
= UNI EN ISO 14001:2004 =**