

Norm:

Numeric designation: no EN norm

Symbolic designation: no EN norm

CHEMICAL COMPOSITION %

ALLOY DESIGNATION		ELEMENTS												
		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Other each	Other total
ML13FC (INGOTS)	Min	10,5	0,6	0	0	0	0	0	0	0	0	0	0	0
	Max	13,5	1,0	0,60	0,55	0,30	0,15	0,10	0,25	0,05	0,05	0,20	0,05	0,25
ML13FC (CASTINGS)	Min	10,5	0,0	0	0	0	0	0	0	0	0	0	0	0
	Max	13,5	1,30	0,60	0,55	0,30	0,15	0,10	0,25	0,05	0,05	0,20	0,05	0,25

NOTE: Other each includes the limits of all elements unspecified in the grid.

MECHANICAL PROPERTIES

(Mechanical properties obtained from samples cast separately at +20°C room temperature)

CASTING PROCESS (condition)	TEMPER DESIGNATION	Rm	Rp02	A	HB	R Fatigue*
		Tensile strength	Yield strength	Elongation	Brinell hardness	Fatigue resistance
		MPa	MPa	%	HBW	MPa
HIGH PRESSURE DIE CASTING	F	225 - 265	130 - 165	1,5 - 2,5	75 - 95	60 - 90

*Values for tests under rotating bending conditions up to 10⁷ cycles (Wöhler curve)

PHYSICAL PROPERTIES

(The following properties are spoilt by the variation of the chemical composition, by its metallurgic structure, casting integrity and casting conditions, therefore these values are approximate)

SPECIFIC WEIGHT	2,65 Kg/dm ³	ELECTRICAL CONDUCTIVITY	15 - 20 MS/m
SPECIFIC HEAT (at 100 °C)	0,962 J/gK	THERMAL CONDUCTIVITY	120 - 150 W/(m K)
ELASTIC MODULUS	76 GPa	LINEAR THERMAL EXPANSION (20 °C - 100 °C)	20,5·10 ⁻⁶ /K

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CTECHNOLOGICAL FEATURES

(Quality indications)

CASTABILITY	B	DECORATIVE ANODIZING	E
REASISTANCE TO HOT TEARING	E	ABILITY TO BE WELDED	E
PRESSURE TIGHTNESS	B	ABILITY TO BE POLISHED	C
MACHINABILITY (after cast)	C	STRENGHT AT ROOM TEMPERATURE	C
MACHINABILITY (after heat treatment)	-	STRENGHT AT ELEVATED TEMPERATURE (200°C)	D
RESISTANCE TO CORROSION	B	DUCTILITY	B

A: EXCELLENT, B: GOOD, C: FAIR, D: POOR, E: NOT RECOMMENDED, F: UNSUITABLE

GUIDELINES FOR USE

The ingot re-melting process must be carried out as fast as possible and overheating must be avoided (maximum melting temperature 770°C). Iron tools that may be touched by the liquid metal must be specially painted to avoid spoiling the alloy. The best alloy purification results are achieved by treating the alloy with inert gases, such as nitrogen and/or argon, to remove dissolved hydrogen and any oxides in the liquid bath. A careful skimming of the bath is recommended. It is possible to recycle sprues and casting appendages up to 40% out of the total charge weight.

Heat Treatment - Alloy not to be treated.

FURTHER FEATURES OF THE ALLOY

Resistance to weathering and seawater - Limited resistance to weathering; not suitable for applications directly touched by seawater.

Notes - Castability is excellent and makes it possible to use it a lot. The higher the content of Mg is, the more this alloy tends to hot tearing, even if this tendency is not well-defined.

USUAL APPLICATIONS

This alloy is suitable for complex castings, to get excellent mechanical properties, thanks to its good pressure tightness and weldability. It is used in the automotive, engine, railway, aeronautics and armoury industries.

This alloy **complies (for information)** with Standard **EN 601**.

DISCLAIMER

Contents are for information purposes only, they do not assure the mentioned properties. The user is held responsible for decisions based on such information and they are not exonerated from verification. Should this not be carried out, Raffmetal S.p.A. assumes no liability.