

Norm: UNI EN 1676 e 1706

Numeric designation: EN AB and AC - 51500

Symbolic designation: EN AB and AC - AlMg5Si2Mn

CHEMICAL COMPOSITION %

| ALLOY DESIGNATION | | ELEMENTS | | | | | | | | | | | | |
|-----------------------------|-----|----------|------|------|-----|-----|------|------|------|------|------|------|------------|-------------|
| | | Si | Fe | Cu | Mn | Mg | Cr | Ni | Zn | Pb | Sn | Ti | Other each | Other total |
| EN AB 51500 EN 1676:2020 | Min | 1,8 | 0 | 0 | 0,4 | 5,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Max | 2,6 | 0,20 | 0,03 | 0,8 | 6,0 | 0,05 | 0,05 | 0,07 | 0,05 | 0,05 | 0,20 | 0,05 | 0,15 |
| EN AC 51500 EN 1706:2020 | Min | 1,8 | 0 | 0 | 0,4 | 4,7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Max | 2,6 | 0,25 | 0,05 | 0,8 | 6,0 | 0,05 | 0,05 | 0,07 | 0,05 | 0,05 | 0,25 | 0,05 | 0,15 |

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 |
| | | EN 1706:2020 | EN 1706:2020 | EN 1706:2020 | EN 1706:2020 | EN 1706:2020 |
| | | MPa | MPa | % | HBW | MPa |
| HIGH PRESSURE DIE CASTING ^(a) | F | 250 | 140 | 5 | 70 | 80 - 110 |

^(a)These mechanical properties are typical to wall thicknesses up to 4 mm

*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 | 2,66 Kg/dm ³ | ELECTRICAL CONDUCTIVITY | EN 1706:2020 | 14 - 16 MS/m |
| SPECIFIC HEAT (at 100 °C) | 0,92 J/gK | THERMAL CONDUCTIVITY | EN 1706:2020 | 110 - 130 W/(m K) |
| ELASTIC MODULUS | 74 GPa | LINEAR THERMAL EXPANSION (20 °C - 100 °C) | EN 1706:2020 | 24·10 ⁻⁶ /K |

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TECHNOLOGICAL FEATURES

(Quality indications excerpted from the norm EN 1706:2020)

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

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 allowed 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 - Resistant to weathering and corrosion, even under aggressive circumstances, such as in 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 can be used wherever high ductility and good strength are required, without heat treatment. Safety parts in engineering vehicles are a case in point. This alloy **does not comply** with Standard **EN 601**.

DISCLAIMER

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