

Norm: UNI EN 1676 e 1706

Numeric designation: EN AB and AC - 51400

Symbolic designation: EN AB and AC - AlMg5(Si)

#### CHEMICAL COMPOSITION %

| ALLOY DESIGNATION           |     | ELEMENTS |      |      |      |     |      |      |      |      |      |      |            |             |
|-----------------------------|-----|----------|------|------|------|-----|------|------|------|------|------|------|------------|-------------|
|                             |     | Si       | Fe   | Cu   | Mn   | Mg  | Cr   | Ni   | Zn   | Pb   | Sn   | Ti   | Other each | Other total |
| EN AB 51400<br>EN 1676:2020 | Min | 0        | 0    | 0    | 0    | 4,8 | 0    | 0    | 0    | 0    | 0    | 0    | 0          | 0           |
|                             | Max | 1,3      | 0,45 | 0,03 | 0,45 | 6,5 | 0,05 | 0,05 | 0,10 | 0,05 | 0,05 | 0,15 | 0,05       | 0,15        |
| EN AC 51400<br>EN 1706:2020 | Min | 0        | 0    | 0    | 0    | 4,5 | 0    | 0    | 0    | 0    | 0    | 0    | 0          | 0           |
|                             | Max | 1,5      | 0,55 | 0,05 | 0,45 | 6,5 | 0,05 | 0,05 | 0,10 | 0,05 | 0,05 | 0,20 | 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<br>(condition) | TEMPER<br>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                |
| SAND                           | F                     | 160              | 100            | 3            | 60               | 60 - 90            |
| PERMANENT MOULD                | F                     | 180              | 110            | 3            | 65               | 60 - 90            |

\*Values for tests under rotating bending conditions up to 10<sup>7</sup> 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 <sup>3</sup> | ELECTRICAL CONDUCTIVITY                      | EN 1706:2020 | 15 - 21 MS/m           |
| SPECIFIC HEAT<br>(at 100 °C) | 0,94 J/gK               | THERMAL CONDUCTIVITY                         | EN 1706:2020 | 110 - 140 W/(m K)      |
| ELASTIC MODULUS              | 69 GPa                  | LINEAR THERMAL EXPANSION<br>(20 °C - 100 °C) | EN 1706:2020 | 24·10 <sup>-6</sup> /K |

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### TECHNOLOGICAL FEATURES

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

|                                             |   |                                                 |   |
|---------------------------------------------|---|-------------------------------------------------|---|
| <b>CASTABILITY</b>                          | C | <b>DECORATIVE ANODIZING</b>                     | B |
| <b>RESISTANCE TO HOT TEARING</b>            | D | <b>ABILITY TO BE WELDED</b>                     | C |
| <b>PRESSURE TIGHTNESS</b>                   | D | <b>ABILITY TO BE POLISHED</b>                   | A |
| <b>MACHINABILITY (after cast)</b>           | A | <b>STRENGTH AT ROOM TEMPERATURE</b>             | D |
| <b>MACHINABILITY (after heat treatment)</b> | - | <b>STRENGTH AT ELEVATED TEMPERATURE (200°C)</b> | B |
| <b>RESISTANCE TO CORROSION</b>              | A | <b>DUCTILITY</b>                                | 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 780°C). Iron tools that may be touched by the liquid metal must be specially painted to avoid spoiling the alloy. As it is a magnesium-based alloy, a fast melting of the ingots is recommended to limit the loss of magnesium, the oxidation of the molten metal and the absorption of hydrogen. 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** - Excellent resistance to weathering; suitable for applications directly touched by seawater.

### USUAL APPLICATIONS

This alloy is suitable for highly corrosion-resistant components for the chemical and food 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.