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Organization with an integrated management system for the quality certified according to the standard ISO9001:2015 and IATF16949:2016, and for the environment according to the standard ISO14001:2015

# TECHNICAL AND SAFETY DATA SHEET

| | |
|---|---|
| **Stand. Body / Standard** | UNI EN 1676:2020 |
| **Alloy Group** | AlSi |
| **Numerical designation** | AB 42200 |
| **Chemical designation** | AlSi7Mg0.6 |

*The present sheet has an information purpose and refers to typical processes.*

*Aluphoenix Srl will not bear any responsibility for any decision in specific processes assumed basing on it.*

## CHEMICAL COMPOSITION

| Elements | Si | Fe | Cu | Mn | Mg | Zn | Ni | Cr | Pb | Sn | Ti | Be | Ca |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Max* | 7.5 | 0.15 | 0.03 | 0.10 | 0.70 | 0.07 | | | | | 0.18 | | |
| *Min* | 6.5 | | | | 0.50 | | | | | | | | |

| Elements | Na | P | Sb | Sr | Co | V | Zr | | | Other each | Other tot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Max* | | | | | | | | | | 0.03 | 0.10 |
| *Min* | | | | | | | | | | | |

## MECHANIC FEATURES ON SEPARATELY CASTED SAMPLES

| Process | Treatment State | R Tensile Strenght (Mpa) | S Yeld Strenght (Mpa) | A Elongation (%) | HB Hardness in Brinnel (HBW) Ball of 10 mm and 500 Kg |
|---|---|---|---|---|---|
| *Sand casting* | T6 | 250 | 210 | 1-2 | 84 |
| *Shell casting* | T6 | 315 | 240 | 4-5 | 101 |

## PHYSICAL FEATURES (Indicative values according to the EN AB standard)

| | | | |
|---|---|---|---|
| **Specific weight** | 2.66 Kg/dm$^3$ | **Thermal expansion from 20 to 200°C** | 22,0 x $10^{-6}$/°C |
| **Interval of solidification and casting** | 550 - 620 °C | **Thermal expansion from 20 to 300°C** | 24,1 x $10^{-6}$/°C |
| **Electrical conductivity** | 20 – 26 MS/m | **Proper sand-casting interval** | 680 – 750 °C |
| **Thermal conductivity at 20°C** | 160 – 180 W/(m K) | **Proper shell-casting interval** | 680 – 750 °C |
| **Thermal expansion from 20 to 100°C** | 22,2 x $10^{-6}$/°C | **Proper die-casting interval** | - |

## TECHNOLOGICAL FEATURES – QUALITATIVE INFORMATION

| | | | |
|---|---|---|---|
| **Castability** | Good | **Corrosion resistance** | Good |
| **Weldability** | Good | **Hot Ulltimate tensile strenght** | - |
| **Polishing** | Sufficient | **Hot mechanical strenght** | Bad |
| **Machining workability** | Good | **Pressure tightness** | Good |
| **Workability after heat treatment** | Good | **Indication for decorative anodiz.** | Bad |

## COMPARISON WITH EQUAL / SIMILAR INTERNATIONAL STANDARDS

| | Italy | Germany | France | UK | USA | ISO | Japan |
|---|---|---|---|---|---|---|---|
| | **UNI** | **DIN 1725/5-86** | **NFA57-105** | **BS 1490-88** | **ASTM B179-18** | **3522-84** | **JIS H2211-92** |
| Equal to | UNI 8392 | GAlSi 7 Mg | AS 7 G06 | | A 356.2 | Al Si 7 Mg | C 4 CV |
| Similar to | | | | LM25 | | | |

## HEAT TREATMENTS - Legend

| | | |
|---|---|---|
| F = Condition of the casting as it comes from the molds without any further thermal or mechanical treatment | T5 = Temper and then artificial ageing at 175°C for about 8 h | T 6 2 = Artificial ageing at 150-160°C for 8 h |
| O = Anneal at 350-390°C for 4-8 h (high-temperature stabilization or recrystallization treatment) | T4 = Artificial ageing at 150-160°C for about 8 h | T6 3 = Artificial ageing at 165-175°C for 16 h |
| Temper in hot water 510-530 °C after preheating of min 12 h for sand casted pieces. Of 8 h min for shell casted ones | | |

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## SAFETY PRESCRIPTIONS

### IDENTIFICATION OF THE SUBSTANCE AND THE PRODUCER

The product is presented in solid state, and is intended for recasting according to different technologies and processes.

It has the shape of bars stacked and braced with plastic straps and possibly wrapped in shrinkable nylon.

The plastic material of the packaging is to be used for recovery, disposal, as waste in accordance with the current regulations on waste.

The melting of the product generates slag for recovery, disposal, as metal waste in accordance with existing waste legislation and metal foundry BAT.

Manufacturer reference for REACH information: quality1@aluphoenix.com

REACH data source: https://echa. europa. eu/it/

### COMPOSITION / INFORMATION ON INGREDIENTS

The Product of Aluphoenix do not overstep concentrations of substances considered by the Regulation (UE) 2020/878 – Annex II.
According to the REACH Directive, the AlSi7Mg0.6 includes the following substances:

| | | |
|---|---|---|
| CAS: 7429-90-5<br>EC/List n°: 231-072-3 | Aluminium<br>Pyr. Sol. 1, H250; Water-react. 2. H261 | 91.24-92.89% |
| CAS: 7440-21-3<br>EC/List n°: 231-130-8 | Silicon<br>Flam, Sol. 2, H228 | 6.5-7.5% |
| CAS: 7439-95-4<br>EC/List n°: 231-104-6 | Magnesium<br>Pyr. Sol. 1, H250; Water-react. 1. H260 | 0.50-0.70% |

*Labelling according to the UE Reg 1272/2008*

### HEALTH RISKS

1. No Harmful gas release when solid
2. No fire or explosion risk when solid. Protect from moisture
3. In the solid state it does not generate delayed symptoms.
4. There are no occupational exposure limits

### PRECAUTIONS

1. Risk of cuts by handling the ingots: Use the proper PPE to protect hands and feet
2. Scalding risk by insert the ingots into a hot melting bath: Use the proper PPE to protect face and body

### PERSISTENCE AND DEGRADABILITY

**Persistence**: Not applicable. The product is inorganic
**Biological degradability**: Not degradable
**Bioaccumulation capacity**: Low
**Long term ecotoxicity**: Not classified for ecotoxicity

### TOXICOLOGICAL INFORMATION

**Ingestion**: Ingestion < 0.1%, pratically insoluble into the pulmonary fluids. The most part of the aluminium absorbed would be quickly eliminated throught the urine.
**Acute effect**: No acute effects
**Irritating / corrosive effect on skin**: No effects
**Irritating / corrosive effect on eyes**: No effects. Aluminium particles can irritate eyes due abrasion effect
**Carcinogenic**: No known effect
**Mutagenicity**: No known effect
**Reproductive toxicity**: No known effect
**Endocrine system interference**: No known effect

### FIRST AID MEASURES

1. **Inhalation of gas / dust during the melting phase of the product**: Provide the supply of fresh air, administer oxygen in case of shortness of breath, in case of persistence or doubts take the subject to the nearest hospital
2. **In case of skin contact with hot solid metal**: Wash the burned area of the body with adbundant cold water and apply an anti burn ointment. Cover the area of the body with a sterile gauze. In case of serious burning, bring the person to the nearest hospital
3. **In case of skin contact with hot liquid metal**: Remove the part of the clothings with molten aluminium on them, or those in contact with the burned area of the body. Wash the burned area of the body with abundant cold water and bring the person to the nearest hospital
4. **In case of contact with the eyes**: Wash the eyes with adbundant cold and clean water or/and idrate the eye with the proper eye solution. In any case quickly bring the person to the nearest hospital

### HAZARDS IDENTIFICATIONS

The piles of Aluphoenix show onto two sides at least, a proper labelling against explosions hazards by inserting ingots into the melting bath, when not completely dried up.

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3. Explosions risk by inserting moist ingots into a hot melting bath. Eventual preheat the ingots and in any case use the proper PPE to protect face and body

**EXTINGUISHING MEDIA**

Aluminium is non-flammable, whether solid or liquid.
If in the liquid state, for its containment in case of spillage, use dry medias of class D (sand, extinguishing powder).
**Do not use water, foam, CO2 or other halogen media**.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

When handling liquid aluminum: To protect yourself from the risk of burns, wear fireproof gloves and clothing including gaiters for footwear and / or fireproof aprons, protective footwear and protective visors.
To protect yourself from the risk of gas / dust inhalation, if diffuse emissions are not properly conveyed, wear a respirator: Full face mask (EN 136) (EN 136), Half mask (DIN EN 140) (EN 140), Filter type : P (EN 143) / BP (EN 141).
In case of presence of dangerous fumes, use an integrated respiratory device (EN12472, EN12941).
When handling solid, hot aluminum, wear flame retardant gloves and protective footwear. In any case, avoid contact with eyes and skin.

**STORAGE**

The Aluphoenix ingot piles are equipped with pallet ingots that allow handling by forklift trucks and transpallet, and their storage up to 3 levels.
Be careful to overlap the stacks so that the stacks are stable; risk of fall and injury for nearby operators.

**STABILITY AND REACTIVITY**

In the solid state, the product is stable and non-reactive to temperature and pressure. It is not soluble in water. It reacts with alkalis (lyes) and strong acidsa and hydrogen mission (H2).

**OTHER INFORMATIONS**

**Index 2**

• Highlighted date of revision and modification at the foot of the page
• Inserted paragraph "IDENTIFICATION OF THE SUBSTANCE AND THE MANUFACTURER"
• Updated section "COMPOSITION / INFORMATION OF INGREDIENTS" with reference to "Regulation (EU) 2020/878 – Annex II"
• Updated section "HEALTH RISKS" with the forecast of "delaying symptoms" and "occupational exposure limits"
• Added paragraph "STORAGE"
• Updated section "STABILITY AND REACTIVITY" regarding "pressure"
• Updated section "PERSISTENCE AND DEGRADABILITY" with "ecotoxicity of long-term"
• Updated section "TOXICOLOGICAL INFORMATION" with "interference with the endocrine system"