



Magnesium Elektron

SERVICE & INNOVATION IN MAGNESIUM

Elektron A8

Datasheet : 454

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Elektron A8

ELEKTRON AZ8 is a general purpose gravity sand casting alloy containing aluminium, zinc and manganese. Good properties may be achieved particularly with the use of chills in the mould. Corrosion resistance is excellent.

APPLICATIONS

The alloy may be used in aerospace or commercial casting applications particularly where there is no high temperature requirement or a requirement for pressure tightness.

SPECIFICATIONS

BS3L122
ASTM B80 AZ81
BS2970 MAG1/2

CHEMICAL COMPOSITION

Aluminium	7.5-8.5%
Zinc	0.3-1%
Manganese	0.2-0.4%
Magnesium	Balance

HEAT TREATMENT

The alloy is normally used in the T4 condition i.e. 16 to 24 hours at 400°C-420°C, air cool.

PHYSICAL PROPERTIES

Specific gravity	1.81
Coefficient of thermal expansion	$27.2 \times 10^{-6} \text{K}^{-1}$
Thermal conductivity	$84 \text{ Wm}^{-1}\text{K}^{-1}$
Specific heat	$1000 \text{ Jkg}^{-1}\text{K}^{-1}$
Electrical resistivity	134 nΩm
Modulus of elasticity	$44 \times 10^3 \text{ MPa}$
Poisson's ratio	0.35
Melting range	470-600°C
Damping Index	0.02
Brinell hardness	55-70

DESIGN DATA

Minimum specification tensile properties
BS 3L122

0.2% Proof stress	80 MPa
Tensile strength	200 MPa
Elongation	7%

OTHER PROPERTIES

CASTABILITY

Good castability.

PATTERN MAKERS SHRINKAGE FACTOR

1.5%

WELDABILITY

Sand castings are weldable by the tungsten arc inert gas process (TIG) with a filler rod of a similar composition. Castings should be welded in the T4 condition and heat treated after welding. This is for 30 mins at 415°C plus 4 hours at 215°C or 16 hours at 170°C.

SURFACE TREATMENT

All the normal chromating, anodising and finishing treatments are applicable. If large grains are present at the surface there may be some colour variation with chromated coatings.

CORROSION RESISTANCE

ASTM B117 salt spray test

Corrosion rate 0.1-0.2 mg/cm²/day
10 mpy



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AMBIENT TEMPERATURE MECHANICAL PROPERTIES

TYPICAL TENSILE PROPERTIES

T4

0.2% Proof stress	105 MPa
Tensile strength	260 MPa
Elongation	10%

TYPICAL SHEAR PROPERTIES

Ultimate stress	140 MPa
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FATIGUE PROPERTIES

Rotating Bend (5×10^7 cycles)	70 MPa
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