



ELEKTRON[®] 675

Elektron 675 is a lightweight, flame resistant, high strength extrusion alloy for use at temperatures up to 250°C. Elektron 675 is superior to some typical commercial aluminium alloys.

Elektron 675 has been optimised for high specific strength retaining its properties at elevated temperatures. Elektron 675 also exhibits excellent corrosion resistant properties in harsh environments. Designs in Elektron 675 can be 20% to 30% lighter than a corresponding aluminium design. Elektron 675 is available as extruded bar and section, forging feedstock and machined billet/slab.

Elektron 675 can be machined into high performance components faster and with less energy than aluminium.

Elektron 675 is also available as billet or slab. For large machined parts this product form is completely isotropic.

HEAT TREATMENT

Elektron 675 is supplied in the T5 heat-treated condition.

Two T5 type heat treatments are available for this alloy in order to offer designers a choice of material properties.

Treatment A offers a combination of high strength with good ductility.

Treatment B offers even higher strength with a reduced ductility value.

AMBIENT TEMPERATURE

MINIMUM EXTRUDED TENSILE VALUES (up to 100mm diameter)

T5A:

LONGITUDINAL

0.2% Proof Stress	230 MPa
Tensile Strength	350 MPa
Elongation	5 %

TRANSVERSE

0.2% Proof Stress	200 MPa
Tensile Strength	300 MPa
Elongation	1 %

T5B:

LONGITUDINAL

0.2% Proof Stress	260 MPa
Tensile Strength	400 MPa
Elongation	3 %

TRANSVERSE

0.2% Proof Stress	230 MPa
Tensile Strength	340 MPa
Elongation	1 %

**TYPICAL TENSILE PROPERTIES
(EXTRUDED BAR T5A)**

LONGITUDINAL

0.2% Proof Stress	260 MPa
Tensile Strength	410 MPa
Elongation	9 %

TRANSVERSE

Transverse properties are dependent on extrusion ratio.

FATIGUE PROPERTIES

ASTM E466 Axial Fatigue	R = 0.1
50x10 ⁷ cycles	200 MPa

FRACTURE TOUGHNESS

K _Q	16 MPa ^{1/2}
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ELEVATED TEMPERATURE MECHANICAL PROPERTIES

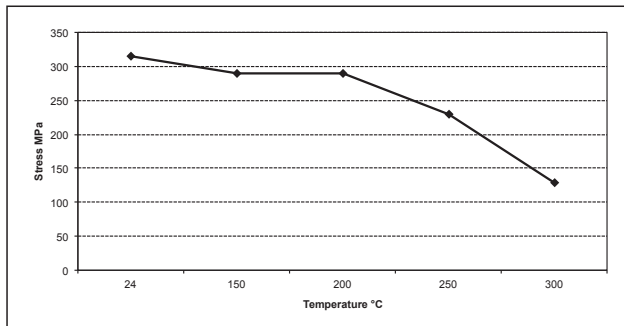


FIG. 1 Effect of Temperature on 0.2% Proof Stress of Elektron 675-T5

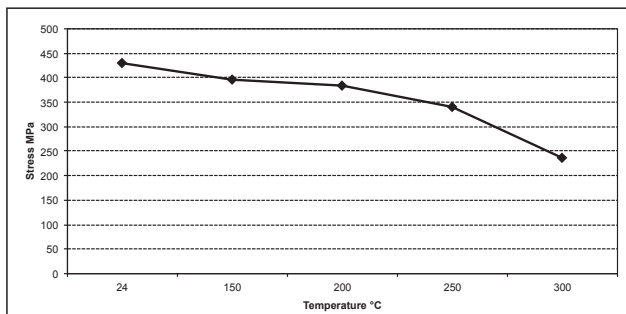


FIG. 2 Effect of Temperature on Tensile Strength of Elektron 675-T5

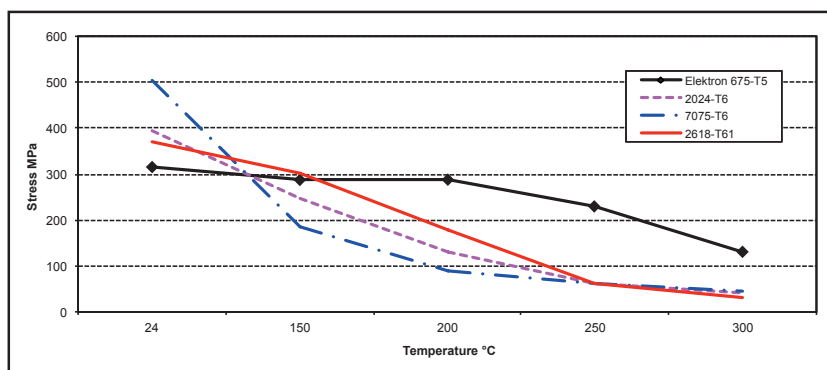


FIG. 3 Effect of Temperature on 0.2% Proof Stress Typical Values Compared with Aluminium Alloys

ELEKTRON® 675

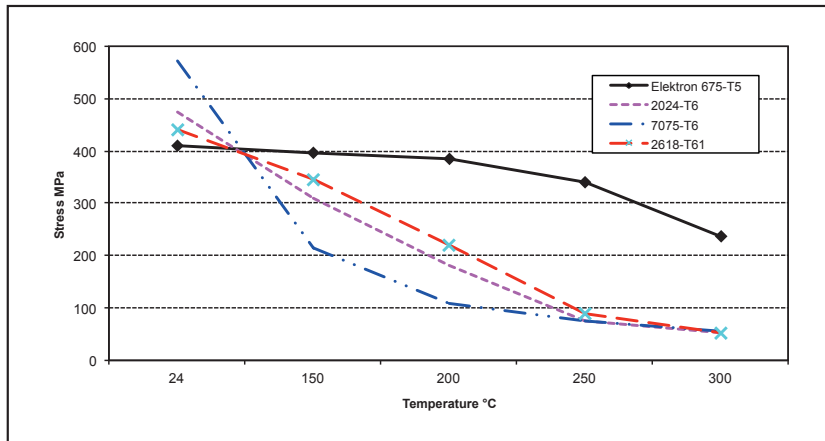


FIG. 4 Effect of Temperature on Tensile Strength Typical Values Compared with Aluminium Alloys

MINIMUM TENSILE VALUES (MACHINED BILLET/SLAB)

0.2% Proof Stress	200 MPa
Tensile Strength	300 MPa
Elongation	1%

N.B. These properties are completely isotropic.

AVAILABILITY

Extruded Elektron 675 is available as:

Round Bar up to 120mm diameter

Section up to 200 x 50 mm

Machined from solid or forging stock is available up to 300 mm diameter or 900 mm x 300 mm section slab.

Additional sizes may be available. Please contact Magnesium Elektron for further details.

QUALITY CONTROL

Product is normally sold to AMS 2154 AA ultrasonic inspection standard.

PHYSICAL PROPERTIES

Specific Gravity	1.95
Thermal Conductivity	76 Wm ⁻¹ K ⁻¹
Coefficient of Thermal Expansion	27.4 x 10 ⁻⁶ K ⁻¹
Brinell Hardness	110 – 118
Poisson's Ratio	0.3
Young's Modulus	44 GPa

CORROSION RESISTANCE

ASTM B117 Salt Spray Test Corrosion rate for base metal

< 0.5 mg/cm²/day

< 40 mpy

† The information contained within is meant as a guideline only

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