

## CL 30AL / CL 31AL Aluminium alloy

Aluminium alloy (powder), chemical composition CL 30AL according to DIN EN 1706 AlSi12(a), CL 31 AL according to DIN EN 1706 AlSi10Mg(b).

CL 30AL and CL 31AL are common aluminium alloys for manufacturing lightweight components in the field of automotive and aerospace industries.

13  
**Al**  
26,982

### CHEMICAL COMPOSITION

	CL 30AL	CL 31AL
Component	Indicative value (%)	Indicative value (%)
Al	Balance	Balance
Si	10,5 – 13,5	9,0 – 11,0
Mg	0 – 0,05	0,20 – 0,45
Fe	0 – 0,55	0 – 0,55
Mn	0 – 0,35	0 – 0,45
Ti	0 – 0,15	0 – 0,15
Cu	0 – 0,05	0 – 0,10
Zn	0 – 0,10	0 – 0,10
C	0 – 0,05	0 – 0,05
Ni	0 – 0,05	0 – 0,05
Pb	0 – 0,05	0 – 0,05
Sn	0 – 0,05	0 – 0,05

Source: MBFZ-toolcraft GmbH

## RANGE OF APPLICATION

The material is used for manufacturing lightweight prototypes, unique or series production parts in the field of automotive and aerospace industries with high mechanical and dynamic load.

## TECHNICAL DATA AFTER RECOMMENDED HEAT TREATMENT

Yield Point $R_e$ <sup>1</sup>	170 - 220 N/mm <sup>2</sup>
Tensile Strength $R_m$ <sup>1</sup>	310 - 325 N/mm <sup>2</sup>
Elongation A <sup>1</sup>	2 - 3 %
Young's modulus <sup>2</sup>	approx. $75 \cdot 10^3$ N/mm <sup>2</sup>
Thermal conductivity $\lambda$ <sup>2</sup>	120 - 180 W/mK
Coefficient of thermal expansion (at rt) <sup>2</sup>	$20 \cdot 10^{-6}$ K <sup>-1</sup>

<sup>1</sup> Tensile test according to DIN EN 50125 at 20°C.

<sup>2</sup> Specification according to the material manufacturer's data sheet.

**CL 30AL**

**CL 31AL**

Aluminium alloy

## MICROSECTION

Test piece (x 20 magnification)



Test piece (x 100 magnification)



## STRESS RELIEF HEAT TREATMENT

Stress relief annealing: Heat up in 1 hour to 240°C. Maintain temperature for 6 hours. Allow the components to cool down in the oven to 100°C. Afterwards allow the component cooling down at ambient atmosphere.

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## MICROSTRUCTURE

Components made from aluminium alloys CL 30AL and CL 31AL display a homogeneous, dense structure after they are manufactured by means of the metal laser melting process LaserCUSING®.

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