

CONCEPTLASER

a GE Additive company

CL 30AL / CL 31AL Aluminium alloys

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

With an appropriate approval* CL 30AL and CL 31AL can be used for production of lightweight components in the field of automotive and aerospace industries.

13
Al
26,982

CHEMICAL COMPOSITION

Component	CL 30AL	CL 31AL
	Indicative value (%)	Indicative value (%)
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
Al	Balance	Balance

LaserCUSING® | Source: MBFZ-toolcraft GmbH

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RANGE OF APPLICATION

With an appropriate approval* CL 30AL and CL 31AL can be used for production of 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

	90° (horizontal)	45° (polar angle)	0° (upright)
Yield Strength $R_{p0,2}$ ¹	211 ± 4 N/mm ²	215 ± 3 N/mm ²	205 ± 3 N/mm ²
Tensile Strength R_m ¹	329 ± 4 N/mm ²	346 ± 3 N/mm ²	344 ± 2 N/mm ²
Elongation A ¹	9 ± 1 %	7 ± 1 %	6 ± 1 %
Young's Modulus ²	approx. 75 · 10 ³ N/mm ²	approx. 75 · 10 ³ N/mm ²	approx. 75 · 10 ³ N/mm ²
Thermal Conductivity λ ²	120 - 180 W/mK	120 - 180 W/mK	120 - 180 W/mK
Coefficient of thermal Expansion (at rt) ²	20 · 10 ⁻⁶ K ⁻¹	20 · 10 ⁻⁶ K ⁻¹	20 · 10 ⁻⁶ K ⁻¹
	¹ Tensile test according to DIN EN 50125 at 20°C ² 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.

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®.

All of the specified figures are approximate figures. The figures which are provided reflect the current level of our knowledge and are dependent on process and machine parameters. The information provided on this material data sheet is therefore not binding and is not deemed to be certified.
 * The approval is branch-specific and/or application-specific and it must be, therefore, carried out by the consumer/user. Approval of materials by Concept Laser GmbH is not available.



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