

Aluminium Alloy

Overview

A new aluminium alloy based on AW 6026 that meets new environmental standards but still retains very good machinability and anodising qualities.

Product Characteristics

- Very good machinability
- Very high strength
- Consistent tolerances
- Good anodising qualities
- Good corrosion resistance

Product Description

Our SigmaChip A6 alloy has been updated to allow it to be used in applications that are impacted by new European environmental legislation regarding maximum allowable lead (Pb) content in finished components. This legislation particularly effects automotive and electrical applications and the chemical composition of SigmaChip A6 has been changed accordingly. This has also resulted in a change in the mechanical properties of SigmaChip A6. SigmaChip A6 finds many applications as a replacement for AW 6262 (which has an allowable lead (Pb) content that makes it incompatible with specific elements of the new European environmental legislation). It is also suitable for many applications as an alternative to AW 6061, AW 6082 and AW 6012.

Performance

Excellent all round aesthetic performance is complimented with high mechanical properties, SigmaChip A6 has a proof stress of up to 380 N/mm² (depending on form and temper) and a tensile strength of up to 400 N/mm² (depending on form and temper).

Machinability

SigmaChip A6 is especially suited to turned parts manufacture where speed and aesthetic component finish have equal importance. The standard AW 6026 aluminium alloy has been optimised for consistent machinability. SigmaChip A6 is especially recommended for such components that have anodising or superior corrosion resistance is an additional requirement. Short, tightly curled chips and rapid metal removal rates ensure greatly reduced machining times over all-purpose grades such as 6082/H30, together with an excellent, bright surface finish. These attributes are combined with very good anodising and corrosion resistance.

Chemical Composition (weight %)

6262	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Bi	Pb
Min	0.40	≤ 0.70	0.15	≤ 0.15	0.80	0.04	≤ 0.25	≤ 0.15	0.40	0.40
Max	0.80		0.40		1.20	0.14			0.70	0.70

Chemical Composition (weight %)

SigmaChip A6	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Bi	Pb
Min	0.60	≤ 0.7	0.20	0.20	0.60	≤ 0.30	≤ 0.30	≤ 0.20	0.50	<0.40
Max	1.40		0.50	1.00	1.20				1.50	

Minimum Mechanical Properties

Condition	Tensile Strength RM N/mm ²	Proof Stress RP 0.2 N/mm ²	Elongation A5%	Brinell Hardness HB
T6	310	260	8	95
Typical	360	330	10	100
T8	345	315	4	100
Typical	370	340	10	105
T9	360	330	4	100
Typical	400	380	8	110

Physical Characteristics

Density	Kg/dm ³	2.72
Modulus of Elasticity	N/mm ²	69,000
Coefficient of Thermal Expansion	K ⁻¹	23.4 X10 ⁻⁶
Thermal Conductivity at 20° C	W/(m K)	172
Electrical Conductivity at 20° C	m/Ωmm ²	26

Machinability	Protective Anodising	Decorative Anodising	Tensile Strength	Natural Corrosion Resistance
SigmaChip A2 2011	6063	6063	2014A	6063
SigmaChip A6 6026	SigmaChip A6 6026	SigmaChip A6 6026	SigmaChip A2 2011	6082
2014A	6082	6082	SigmaChip A6 6026	SigmaChip A6 6026
6082	2014A	2014A	6082	2014A
6063	SigmaChip A2 2011	SigmaChip A2 2011	6063	SigmaChip A2 2011

The above table shows performance comparisons between comparative grades. The higher up the table, the better the performance. For example, SigmaChipA2 has much better machinability than 6063. However with respect to natural corrosion resistance, 6063 is superior.

Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

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