Xometry

Datasheet

Aluminium 1100P

Description

1100P is a non-heat-treatable, high-purity commercial pure aluminum sheet distinguished by its exceptional electrical and thermal conductivity (59% IACS) and superior formability (elongation ≥35%), making it ideal for deep-drawing applications demanding high conductivity such as cable sheathing, heat sinks, and food containers. Compared to 5052, 1100P offers lower strength but superior electrical and thermal conductivity.

1100P Aluminium Alloy Material Data Sheet

1. Chemical Composition (%)

Elements	Al	Si+Fe	Cu	Mn	Zn	Other (individual)	Other (total)
Content	≥99.00	≤0.95	0.05~0.20	≤0.05	≤0.10	≤0.05	≤0.15

Feature: High-purity commercial pure aluminum containing trace amounts of copper to enhance strength, with no intentionally added alloying elements

Xometry

Datasheet ▸

2. Physical Properties

Performance parameters	Value	Unit	Note
Density	2.71	g/cm²	Standard values
Melting range	643~657	°C	Solidus–Liquidus range
Elastic modulus	68~69	GPa	Tensile/compression properties
Poisson's ratio	0.33	-	
Coefficient of Thermal Expansion	23.6	μm/m·K	20-100°C
Thermal conductivity	218~222	W/(m·K)	Excellent thermal conductivity
Electrical conductivity	59%~62%	IACS	Equivalent to 53–62% of the electrical conductivity of copper
Resistivity	0.0299	μΩ·cm	20°C
Specific heat capacity	0.904	kJ/(kg·K)	
Reflectivity	86%	-	Visible light, bare metal

Xometry

Datasheet ▸

3. Mechanical Properties (by Temper)

Form					Copy
State	Tensile strength Rm (MPa)	Yield Strength Rp0.2 (MPa)	Elongation A (%)	Hardness HB	Feature description
O (annealing)	75~105	30~50	30~35	23~25	Fully softened, ductility
H12	95~125	75~90	8~12	-	1/4 hard, slight work hardening
H14	110~145	≥95	5~9	44	Half-hard, strength and formability
H16	125~165	115~140	4~6	-	3/4 hard, high strength
H18	≥150	≥140	2~4	-	Full hard, maximum cold working

H14 is the most commonly used temper for sheet products, offering the best combination of properties.

4. Process Performance

Items	Performance classification	Description
Weldability	★★★★★Excellent	Excellent weldability with gas welding, arc welding, brazing, resistance welding.
Formability	★★★★★Excellent	Excellent deep drawing, bending, and spinning performance; elongation ≥ 35% in O temper
Machinability	★★★☆☆Good	Easy to machine, but prone to built-up edge, sharp tools required
Corrosion resistance	★★★★★Excellent	Suitable for atmospheric, water, and mild acid/alkaline environments, with performance enhanced after anodizing
Heat treatment	-	Not heat-treatable; strength can only be increased through cold working (work hardening)

Xometry

Datasheet

5. Characteristics and Applications

Core characteristics	Typical applications
Excellent electrical and thermal conductivity (59% IACS)	Cable sheathing, busbars, conductive strips, heat sinks
Excellent formability (elongation ≥ 35% in O temper)	Deep-drawn containers, aluminum foil, food packaging, bottle caps
High surface reflectivity (86%)	Lamp reflectors, decorative panels, solar collector plates
Excellent corrosion resistance	Chemical equipment, storage tanks, building curtain walls, canopies
Excellent weldability	Heat exchangers, air conditioning tubing, welded structural components

6. Codes and Standards

Type of standard	No.
Chinese standard	GB/T 3190--2008
U.S. standard	ASTM B209, AMS 4001 (O temper), AMS 4003 (H14)
European standard	EN AW-1100
Japanese standard	JIS A1100P