



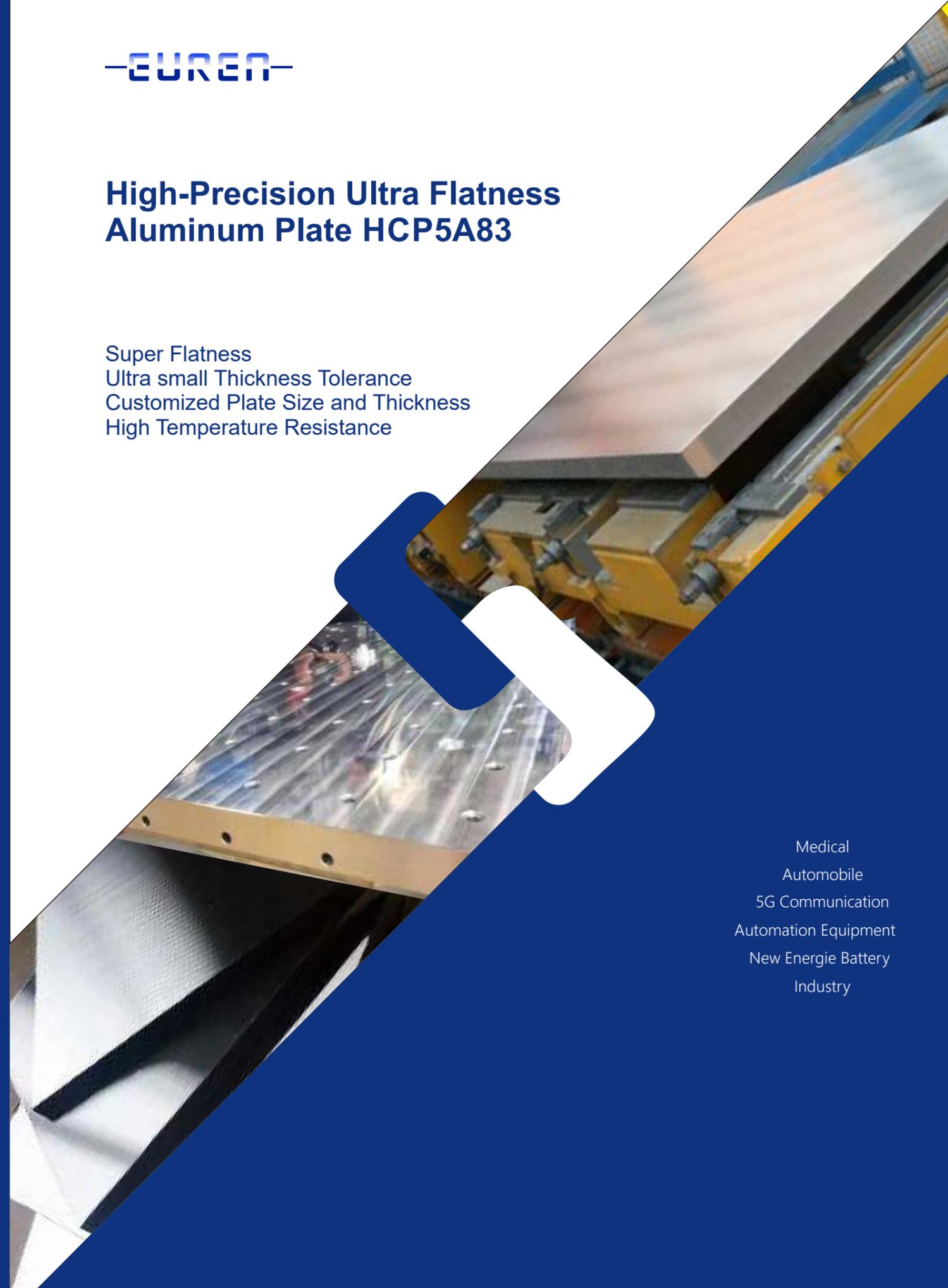
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High-Precision Ultra Flatness Aluminum Plate HCP5A83

Super Flatness
Ultra small Thickness Tolerance
Customized Plate Size and Thickness
High Temperature Resistance



Medical
Automobile
5G Communication
Automation Equipment
New Energie Battery
Industry



High precision aluminum cast plate HCP 5A83

5A83 precision aluminum plate strictly controls impurities, alkali metal elements and low melting point elements, which improves the corrosion resistance and creep resistance of the alloy. Both sides of the plate are milled and present an ultra-flat and fine surface, and the dimensional tolerance standard is the world's leading. Double-sided film protection, thickness specification coverage ($\geq 4\text{mm}$).

5A83 precision aluminum alloy plate is improved on the basis of European standard DIN EN 537-3/3.3547, which meets the requirements of food-grade materials and is widely used in fixture and jig, IT, semiconductor, armarium, electronic instruments, optics and communications base station, precision mechanics, benchmarks, panels, engine manufacturing, vehicle engineering, shipbuilding, aerospace fastener, bicycle parts, valve bodies. Tube mold bases, tableware molds, food-grade packaging, blow/blister molds, templates, marine components, communication tools etc.

Due to the addition of trace amounts of rare earth elements and Boron (B) and Carbon (C), the thermal conductivity, heat dissipation, high temperature and corrosion resistance are improved, and the dimensional accuracy and processing stability of the plate are at the international advanced level.

High-precision ultral-flat Aluminum plate

- Flatness $\leq 0.12 \text{ mm/M}^2$
- Tolerance thickness $\pm 0.07 \text{ mm}$
- Thickness range 5 ~ 100 mm
- Plate size $\leq 1860 \text{ mm} * 4000 \text{ mm}$
- Thermal shock resistance 300°C
- Processing deformation 0.2mm/M

High-precision sawn aluminum plate

- Six-sided precision sawing
- Thickness range 30~150 mm
- Length range 50~4500 mm
- Width range 40~1980 mm



Thermal Shock Resistance Hardness Test						
Holding Temperature						
Times	Alloy Grade	Brinell hardness(HBW)	Alloy Grade	Brinell hardness(HBW)	Alloy Grade	Brinell hardness(HBW)
1	6061-T6	47.2	7075-T6	68.6	5A83	75.5
2		47.8		70.1		75.5
3		46.6		68.5		75.2
4		45.9		70.3		75.5
5		46.7		70.8		75
6		46.4		73.6		75.2
7		46.1		68.5		74.7
8		46.6		68.2		75.1
original hardness		89		148		75.4

After the thermal shock resistance hardness test, the hardness of 6061-T6 and 7075-T6 alloys decreases significantly. The original strengthened structure is damaged, and the mechanical properties are greatly attenuated and irrecoverable. The hardness value of 5A83 is almost unchanged.



- stress-relieved state, small processing deformation
- excellent plasticity and weldability
- high precision surface
- easy to process
- high strength, excellent corrosion and oxidation resistance
- super stability of mechanical properties
- consistent performance inside and out
- excellent high temperature resistance
- custom plate size and thickness



- high precision
- high quality
- high efficiency

HCP 5A83

Chemical Composition	EN AW-5083 0 · AlMg4.5Mn
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Material Properties	
Machinability	excellent
Weldability	very good
Anodising Properties	good

Typical Mechanical Properties	
Tensile Strength R_m	270-310 MPa (N/mm ²)
Yield Strength $R_p 0.2$	110-130 MPa (N/mm ²)
Elongation A5	≥12%
Brinell Hardness	70 ~ 75 HB
Dimensional Stability	very good

Typical Physical Properties	
Density	2.66 g/cm ³
Electrical Conductivity	16-19 MS/m (m/Ω mm ²)
Modulus of Elasticity	~70,000 N/mm ²
Thermal Conductivity	110-140 W/(mK)
Coefficient of Thermal Expansion	24.2 * 10 ⁻⁶ /K

Corrosion Resistance	
normal atmosphere	very good
industry, sea water	good

Tolerances	
Tolerance in Thickness(5~100 mm)	+/- 0.07 mm
Flatness	5~12 mm thickness ≤ 0.3 mm >12~100 mm thickness ≤ 0.12 mm
Surface Finish Ra	≤ 0.4 μm
Tolerance in Length and Width for Plates	0/+10 mm

Thickness Range & Sizes		Plates and pre-cut sizes are available in the following dimensions
Thickness 5 ~ 100 mm	standard. Width	x Length
≥5 mm	1520 mm	x 3020 mm
	max. Width	x Length
≥5 mm	2000 mm	x 4000 mm
Customerized Size on Demand		

Ultra low internal stress

Ultral Flatness

Ultra small Thickness Tolerance



Application Scenarios

Automobile production line combined and inspection base plate

HCP 5A83 is used in the assembly base plate of the automobile production line instead of 6061 aluminium base plate. It currently applied in the production lines of Geely Volvo, FAW-Volkswagen, Tesla, Mercedes-Benz, Chrysler and other models to determine the relative position of each chassis parts.

HCP5A83 is an ultra-low internal stress aluminum alloy with both casting performance and processing performance and solves the deformation of 6061 aluminium alloy during processing. It has stable quality and is the best choice for high-precision inspection tools!



- Homogeneous
- Very little deformation
- High temperature resistance

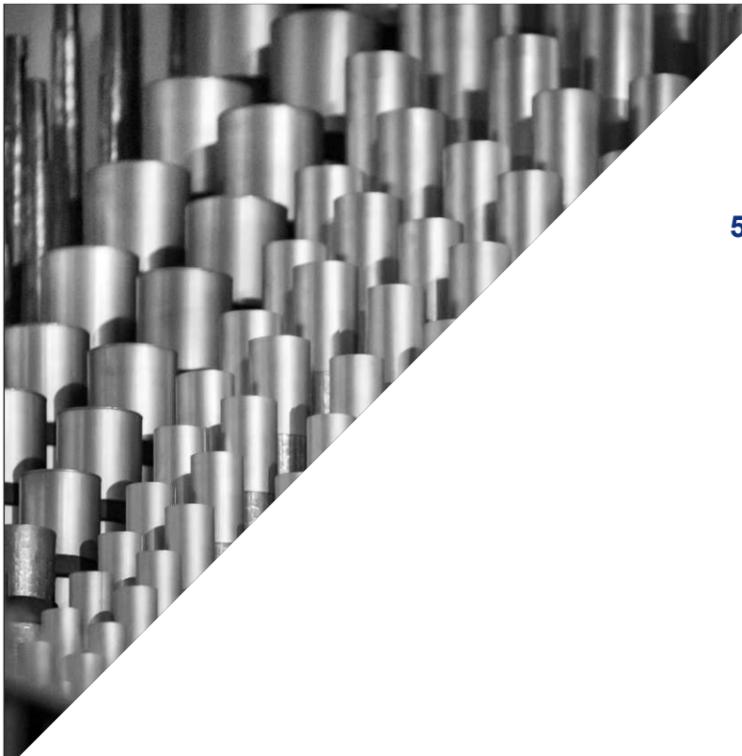
HCP 5A83



Automobile Mold

HCP 5A83 is used in automotive plastic molds, including injection molds, steam molds, etc. The application characteristics are consistent internal and external uniformity, small processing deformation, and excellent high temperature resistance.





5G communication equipment base station



New energy vehicle battery tray

HCP 5A83 precision sawn aluminum plate is used in the field of new energy vehicles



Semiconductor Substrate

HCP 5A83 is used in semiconductor substrates, vacuum chambers precision parts, etc. Due to its special application environment, semiconductors require ultra-high machining accuracy and quality.



LED and LCD screen

HCP 5A83 is widely used in manufacturing equipment platforms such as LED screens and LCD screens. It has supplied Foxconn, Lens Technology, BYD and other well-known enterprises through distribution, all of which take advantage of its large plane processing and small deformation.



Semiconductor fixtures

The application of 5A83 precision ultra-flat aluminum plate in rectifier and diode fixtures requires 0.1 mm flatness after processing.



Automation Equipment

Industry Application



3D print equipment

The main application thickness is 25~40mm, and the overall flatness requirement after processing is very high.



Foaming mold of Siemens refrigerator

The processing deformation is required to be less than 0.1mm.
The excellent high temperature resistance of HCP 5A83.



Medical equipment

HCP 5A83 is widely used in the medical equipment industry, such as a large number of equipment parts in MRI machines, CT machines, pulmonary ventilators, relevant equipment bottom plates and water cooling systems, etc. It mainly solves the requirements of precision medical equipment for large parts with high flatness, small deformation required for processing, excellent welding performance, and no deformation in later use.

