

All the technical data and information contained herein are subject to change without notice.

Advanced Surface Coating

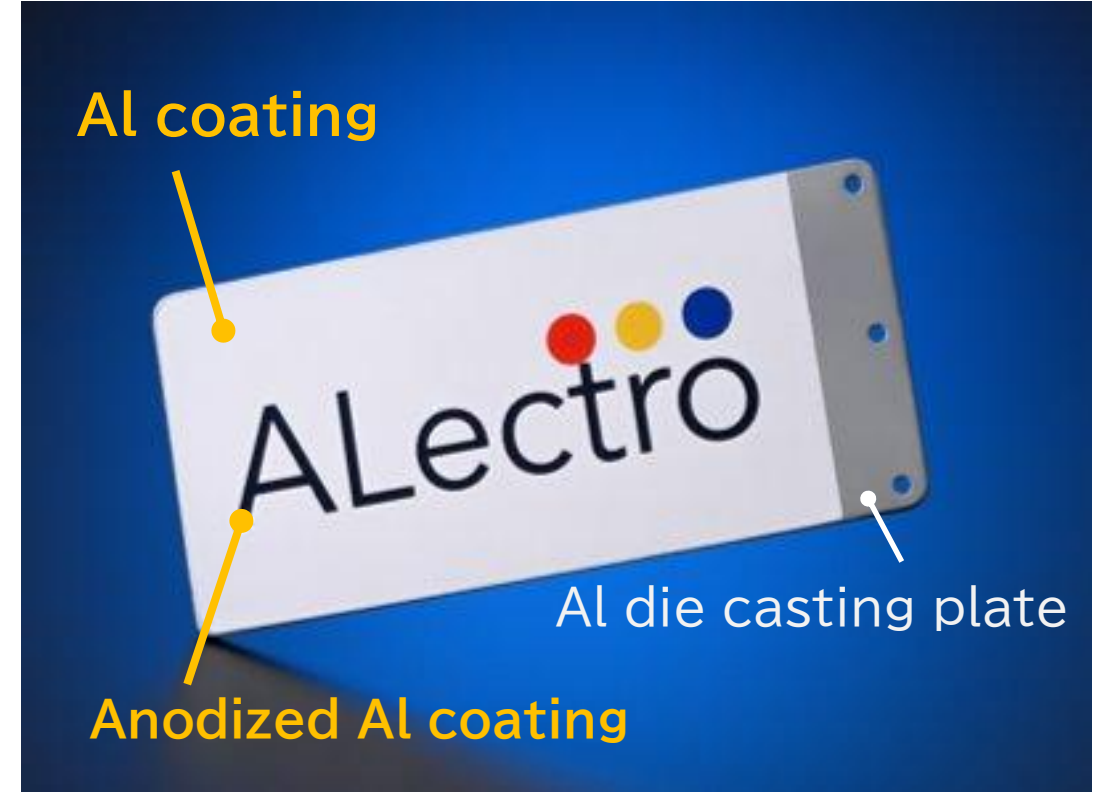
Aluminum Electroplating Technology

ALectroTM
Aluminum electroplating technology

Proterial, Ltd.

Marketing & Sales Division

Technology Alliance Department



Alectro™ contributes to enhancing the value of customer products

Aesthetic Quality

- ✓ Create metallic appearance & variety of colors
- ✓ Reduce VOC* vs. painting

Al plating & anodizing



Metallic gloss can also be achieved by polishing

Corrosion resistance

- ✓ Prevent rust & corrosion
- ✓ Protect products in harsh environments

Al plating on Mg block

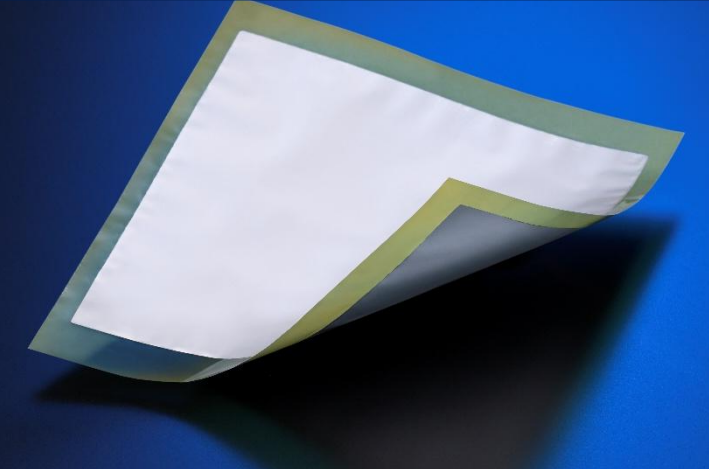


Aluminum protects materials prone to corrosion

Functionality

- ✓ Coat with thin aluminum
- ✓ Add functionalities of aluminum to the surface

Al plating on resin film



Aluminum provides conductivity, reflectivity, and other benefits

*VOC = Volatile Organic Compounds

Alectro™ imparts various functionalities to customer products.

Features

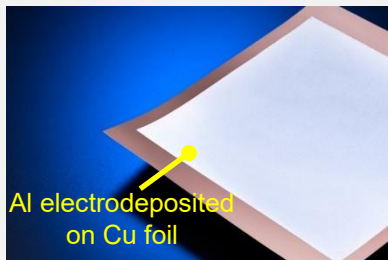
- **High purity, dense Aluminum coating** on metal surface
- **Coating thickness range of 3-100 μm** , which is difficult to achieve using vapor deposition or hot-dip plating
- **Enhanced both aesthetics and corrosion resistance** through anodizing after aluminum coating.

Applications

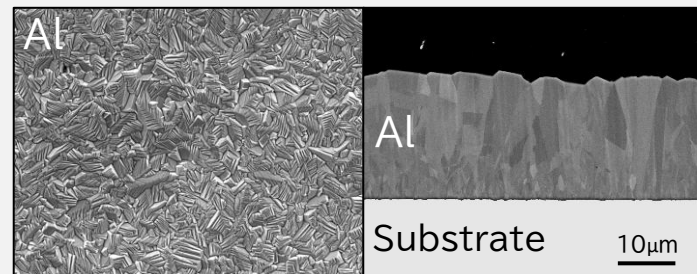
- Decorative coating
- Corrosion resistance coating
- Functional foil/film

Properties

✓ High selectivity of substrate materials



✓ Fine roughness, dense, uniform thickness

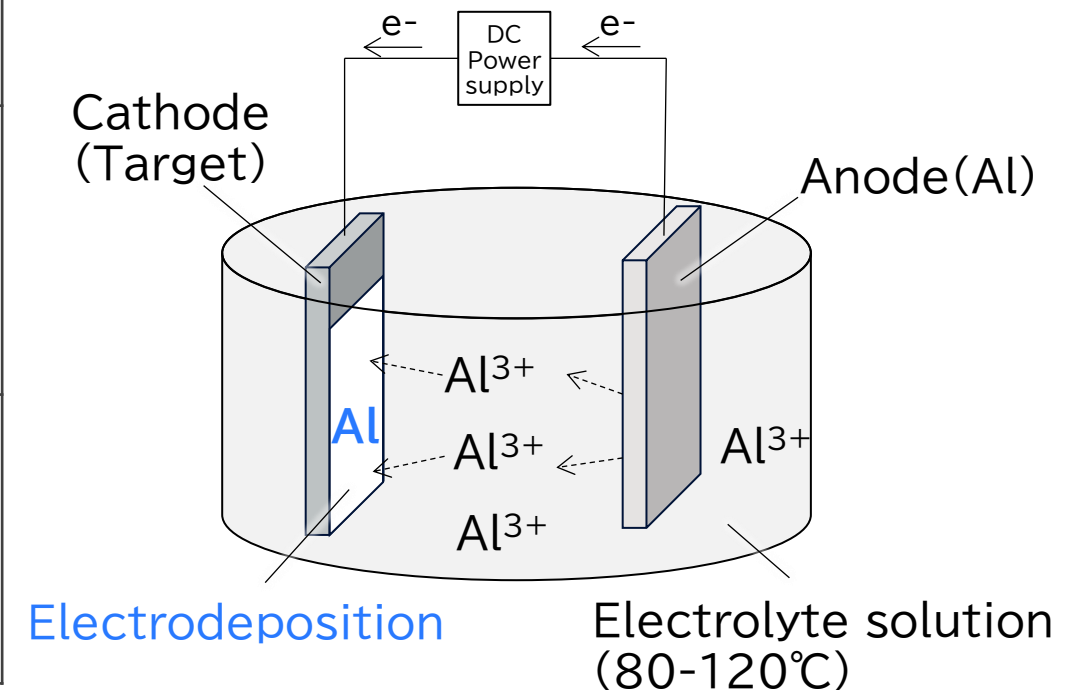


✓ Aesthetic and durability imparted through anodizing



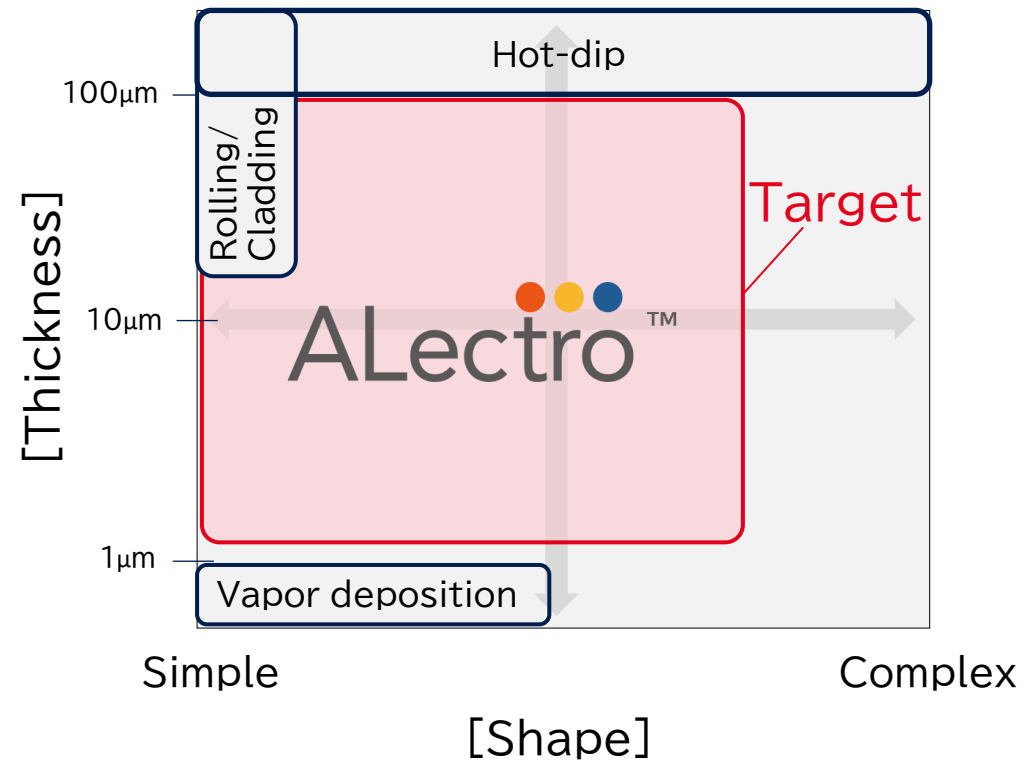
ALectro™ uses a non-aqueous electrolyte solution with dimethyl sulfone, a non-toxic and a non-flammable solvent

Role	Reagent	Appearance	Applications
Solvents	Dimethyl sulfone (DMSO ₂)		Food additive, cosmetics
Metal salts	Aluminum chloride (AlCl ₃)		Catalysts



✓ Uses eco-friendly solvents

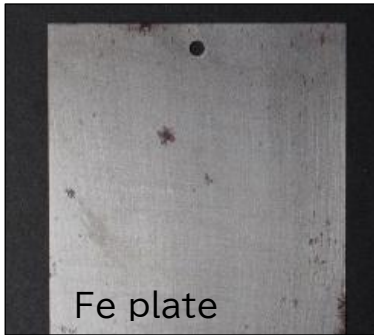
Alectro™ achieves a unique aluminum coating with a thickness of 3–100 μm.



	Hot-dip	Vapor deposition	Alectro™
Cross-section			
Purity	≒ 93.0%	> 99.0%	> 99.9%
Temp.	600-750°C	> 25°C	80-120°C
Rate	+++	< 0.2 $\frac{\mu\text{m}}{\text{min}}$	> 1 $\frac{\mu\text{m}}{\text{min}}$

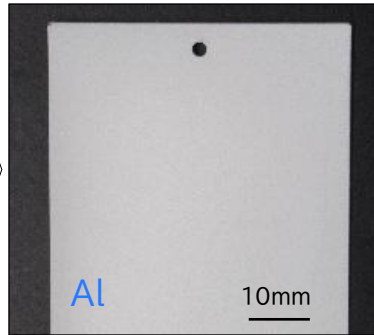
Alectro™ offers aluminum electrodeposition with versatile features.
It also enables anodizing to enhance surface properties.

Before plating



Fe plate

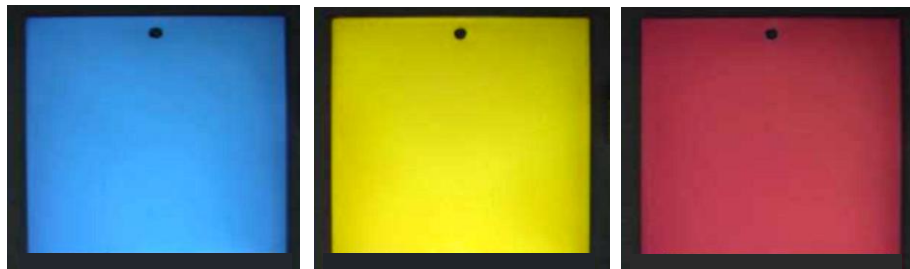
After plating



Al

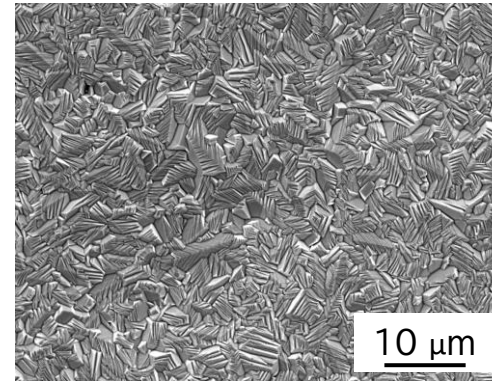
10mm

After anodizing

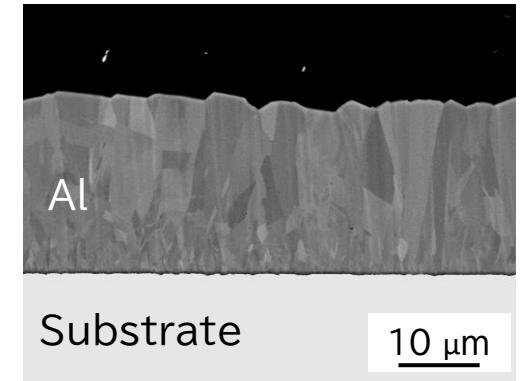


- ✓ Replacement of painting to achieve real metal texture and coloring
- ✓ Enhanced aesthetic and durability

- ✓ Fine roughness, dense, uniform thickness



10 μm



Al

Substrate

10 μm

Purity	>99.9%	✓ High purity
Thickness	3-100 μm	
Roughness	Ra ÷ 0.1-0.6 μm	
Electrical resistance	3.1 μΩ cm (same as pure Al)	
Substrate	Metal : Fe, Cu, Al, Mg, SUS... Resin : PI, CFRP, ...	

PROTERIAL
