High-purity Aluminum Foil

Purification

Metallic Materials

Heat Treatment

Mixing/Dispersion

Casting/Molding

Heating/Cooling Control

Laminate/Printing

Aluminum Can

Extrusion and Drawing Tubes

Automotive Cooling Devices

Heat Exchangers

Skyve heat sink™

Aluminum plate with high heat conduction and high strength

SHOTIC™

Aluminum Can

Showa Aluminum Can Corp.

Continuously Cast Rods

Large-sized Extrusions

Aluminum Can

High-temperature heat treatment

Showa Aluminum Can Corp.

Car Injectors

Automotive Die Casting

Large Extrusions

Aluminum plate with high heat conduction and high strength

ST60
High-purity Aluminum Foil

**Product Example**

High-purity aluminum foils are used as electrode foils of aluminum electrolytic capacitors after surface enlargement treatment by customers, thus playing an essential role for electric and electronic products.

**Our technologies**

- **Refining technology**
  “Cojunal method” is a refining technology utilizing the segregated solidification principle, which we were the first in the world to commercialize successfully.
  Refining ability: 99.9% Al → 99.998% Al

- **Molten metal treatment technology**
  The “GBF method” is an excellent molten metal treatment technology, whereby inert gas is blown into molten metal as ultrafine bubbles to efficiently remove hydrogen and non-metal inclusions in the molten metal.

- **Structure control technology**
  In the case of, for example, high-voltage capacitor anode foil, since surface enlargement treatment is applied using cube orientation, cube texture control is needed.

![Etching photo of the non-cube orientation and cube orientation areas (Cross section)](image)
Advanced Battery Materials

- Artificial Graphite Anode Materials
- Separators
- SCMG™
- Vapor-grown Carbon Fiber
- Carbon Coated Foil
- SDX™
- LIB Packing Materials
- SPALF™

- Micro-particulation
- High-Temperature Heat Treatment
- Carbon Structure Control
- Mixing/Dispersion
- Laminate/Printing
- Casting/Molding

Showa Denko Packaging Co., Ltd.

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LiB Packaging Materials

Product example

Example of SPALF™ constituents

- ONY (Nylon film)
- Adhesive
- Substrate treating agent
- Aluminum foil
- Substrate treating agent
- Adhesive
- CPP (Sealant film)

Development of Pouch LiB Application

2000 → 2015

Our technologies

- **Paint (Coating technology)**
  - Thin film coating technology

- **Laminate (Lamination technology)**
  - Lamination technology suitable for constituent materials

- **Create (Molding technology)**
  - Die design technology to realize product shape
  - Adhesive evaluation technology suitable for product applications

**Characteristics of SPALF™**

- Light weight
- Unrestricted product shape
- Good formability
- Insulation properties

**Comparison of the forming depth**

- **Showa vs. Other company**

**Dry laminator/coater**

Showa Denko Packaging (SPA) Corporate Philosophy: We can offer products created by “paint, laminate, create” technology to the world, and contribute to the development of society.