Aluminum

High-purity Aluminum Foil

Purification

Casting/ Molding

Metallic Materials

Laminate/ Printing

Heating/ Cooling Control

Mixing/ Dispersion

Continuously Cast Rods

Showa Aluminum Can Corp.

Aluminum Can

Extrusion and Drawing Tubes

Automotive Cooling Devices

Heat Exchangers

Skyve heat sink™

Aluminum plate with high heat conduction and high strength

Large-sized Extrusions

High-Temperature Heat Treatment

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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)
**Product example**

Refrigerator evaporator
- Evaporator for household/industrial use refrigerator-freezer

High-precision heat sink
- Heat sink for cooling control panels of various industrial machines

**Our technologies**

- The use of aluminum for all components minimizes weight.
- We own aluminum rolling/extruding technology.
- We can design excellent heat-exchange performance.
  (Highly heat-conductive oil circuit and cooling fin structure)
- We own junction technologies, such as welding and brazing.
  (Strength, airtightness)
- We use the potential difference of materials to achieve high-corrosion resistance in material design.
- We can perform integrated manufacturing from heat design and material production to assembly.
- We have the manufacturing ability to ensure no complaints arise in the market.
- We can design the structure and specifications suitable for the customer’s usage environment.
  (Hydrophilic surface treatment, low frost formation structure, etc.)

**Examples of high-precision heat sinks**

- Wide/light/thin
- Large size/low cost
- High design freedom
- Skyve heat sink
- Extruded heat sink
- Brazed heat sink
- Heat pipe heat sink
- Roll bond panel type heat pipe container
**Product Example**

- Vehicle-installed inverter cooling device
- Direct cooling type cold plate
- **PCU** (Power control unit)
- IGBT element
- Ceramic insulating substrate
- Vehicle-installed secondary battery cooling device
  - Water-cooled LLC or air conditioning cooling medium

**Our technologies**

- We own the technology of aluminum bulk brazing of the ceramic insulating substrate and the heat sink.
- We own aluminum forming technology, i.e., extrusion, rolling, forging, and press method.
- Down-sizing and space-saving can be achieved thanks to the improved performance.
- We own joining technologies, such as welding and brazing.
- Thin panels can save space.
- Either an internal fluid LLC or cooling medium can be used.
### Aluminum plate with high heat conduction and high strength 〜ST60〜

#### Product examples

- **Heat sinks for FPD**
  - Back panels for PDP and LCD

- **Heat sinks in electronic devices**
  - Heat sinks for PCs, car navigation systems, and game machines

- **Enclosures for mobile devices**
  - Enclosures for smartphones and tablet devices

#### Our technologies

- **Hardening and aging technologies**
  ST60-HSM® is an aluminum plate with high strength developed using our hardening, aging, and rolling technologies.

- **Thermal diffusion evaluation technology**
  Our measurement, evaluation, and simulation technologies are used to evaluate thermal diffusivity.

- **Aluminum rolling technology**
  Our seamless facilities from melting and casting to rolling processes are used to produce various coils and plates.

#### Manufacturing process for ST60-HSM®

- Melting, casting
- Hot rolling
- Cold rolling
- Trimming, reforming
- Cutting
- Hardening
- Aging
- Annealing
Large-sized extrusions

Product examples

High-precision production of large products using a 7,000-ton press, the largest in Japan

Automobile parts  A5083 T bar for ships (100 × 300 mm)

Vehicle structure (width: 570 mm)

Heat sink  Tongs ratio: 14

Our technologies

■ Alloy design technology
Technology to optimize alloy compositions and achieve requirements for various applications

■ Die technology
Our abundant design data and advanced design technology allow us to produce various products with complicated cross sections.

■ CAE technology
We use our simulation technology for optimizing the settings and conditions of extrusions and die design, in order to produce products with complicated shapes faster and more precisely.

Example of simulated speed distribution of an extrusion

Fast

Slow
Continuously-cast Rods ~SHOTIC™~

Product Example

- Engine piston
- Valve retainer
- Body of high-pressure pump for direct-injection engine
- OCV sleeve for VVT
- Propeller shaft yoke
- Car air compressor parts
- Upper arm of the suspension
- Brake caliper & piston

Our technologies

- Gas-pressurized hot-top continuous casting process
- Gas-pressurized completely horizontal continuous casting process

The gas-pressurized completely horizontal continuous casting process has evolved from the gas-pressurized hot-top continuous casting process to produce thinner SHOTIC™ rods with higher productivity. Our technological capability is world-leading.

Microscopic structure of Al-eutectic Si alloy

Proved in replacing iron parts with aluminum (Swash plates, suspensions, brake pistons, etc.)
Improving aluminum casting functionality (Compressor pistons, engine pistons, etc.)
Product examples

**Aluminum can body (2-piece can)**
- Applications: Beer/low-malt beer, RTD, drinks (soft, carbonated, retort)
- Size: Slim type (202 dia.): 190 mL/250 mL, Standard type (211 dia.): 250 mL/350 mL/500 mL
- Lid dia.: Slim: up to 200 dia., Standard: up to 204 dia./206 dia.

**Aluminum can lid (stay-on tab)**
- Applications: Beer/low-malt beer, RTD, drinks (soft, carbonated, retort)
- Size: 204 dia. for beer, 206 dia for RTD/drinks, 200 dia. for slim can

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**Our technologies**

- **Our high-speed molding technology** for thin walls ensures stable quality.
  - Main molding technologies: Drawing, ironing, trimming, necking, transferring
  - Can manufacturing speed: Can body: up to 2,000 units/min. Lid: up to 8,000 pieces/min.
- **Our various printing technologies** satisfy customers' requests for precise printing.
- **Our internal coating technology** for food packaging stabilizes the quality of the contents.
- **Our high-speed transfer technology** enables mass production without degradation of appearance.
- **Our high-speed 100% inspection system** prevents the outflow of defective products.
- **IoT technology** that collects and analyzes production conditions and quality data enables timely and stable production management.
- **Our lid seaming technology** contributes to customers' stable production.