

Aluminum Foil from China

U.S. International Trade Commission

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Aluminum Fin Stock

Radiator



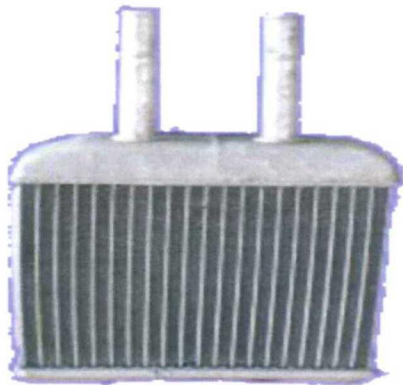
Charge Air Cooler



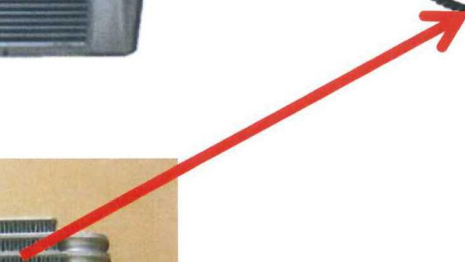
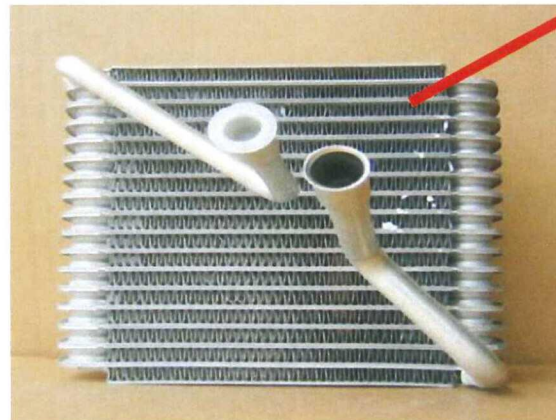
Fins:



Heater Core



Evaporator



Aluminum Foil

Converter Foil



Household Foil



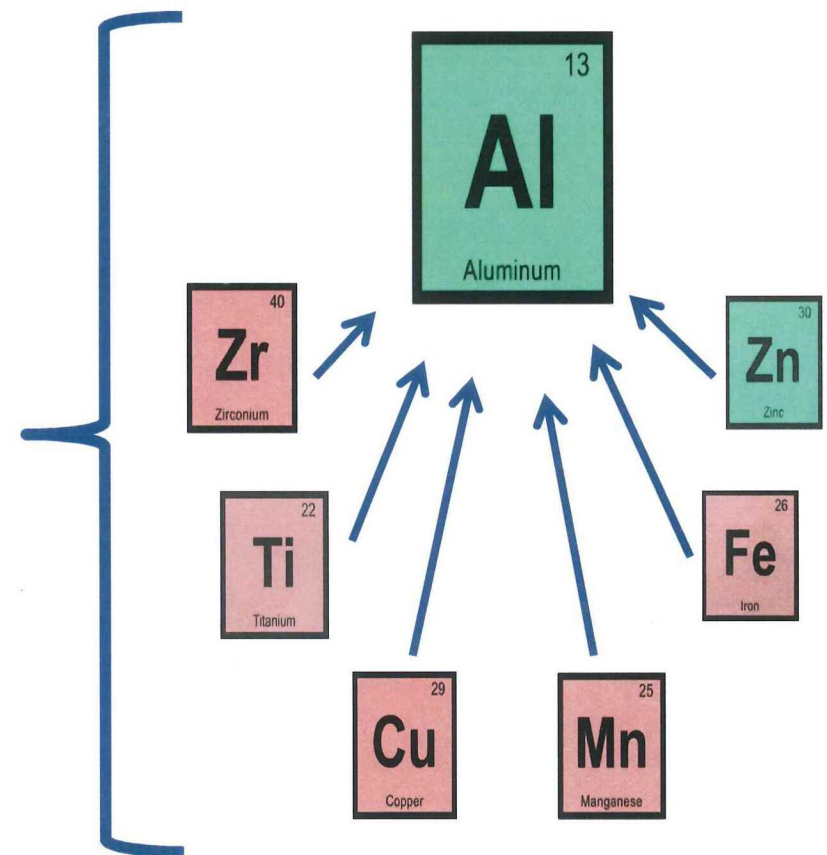
Separate Like Products

Differences	Fins Stock	Aluminum Foil
Physical	Thick gauge: above 45 microns	Thin gauge: 8 to 40 microns
Chemical	Proprietary alloys	1100, 1200, 3000, and 8000 series alloys
Uses	Heat exchangers; permanently incorporated into product	Packaging/containers for food and medicine; must remove for ultimate use
Channels of Distribution	Tier 2 → Tier 1 → OEMS (e.g., auto companies)	→ Food and medicine package Cos, spoolers, and grocery stores
Manufacturing Process and Cost	Complex and Costly: DC Cast, 15 production processes, single rolled, in small batches	Simpler: continuous cast, double-rolled, in large batches
Perceptions	Separate products and markets; never interchangeable	

Alloys for Fin Stock:

- Most alloys used by Valeo are proprietary alloys and processes developed by aluminum manufacturers to meet the demanding automotive service environment.
 - **Physical Characteristics**
 - Good Mechanical Properties
 - Corrosion Resistance
 - Sag Resistance
 - **Processing**
 - Homogenization to reduce chemical segregation of cast structure
 - Leveling to improve flatness and waviness of slit rolled aluminum

Special alloying to develop specific physical characteristics



Manufacturing Process of Fin Stock

Fin stock requires special chemical compositions, and high demand in physical properties and dimensional tolerance for heat exchanger manufacturing. Fin stock production starts from DC Casting and requires up to 15 process steps with tight process control in each step. The below picture shows the main processes.



US Fin Stock Industry Cannot Meet Demand

- US rolling mills have exited fin stock market:
 - Complex production process
 - Low profitability rates
 - Lack of standardization on alloys, gauges, widths
 - Alternative markets: auto body sheet
- Qualification issues with remaining US producers

US ROLLING MILLS HAVE LEFT THE MARKET – THE DATA

- ▶ SINCE 2000, MANY MILLS HAVE ABANDONED FIN STOCK FOR OTHER HIGHER GROWTH AND PROFIT PRODUCTS

Plant	When	Closed capacity (1000 tons per year)	Closed or Reduced capacity HEX (1000 tons per year)	
KAISER Trentwood	2001		6	Stopped production for Auto HEX
WISE Listerhill	2001		5	Stopped production for Auto HEX
ALCOA Lebanon	2002		13	Plant closed (Auto HEX was 13kt out of 80kt capacity)
ALCOA Badin	2004		5	Stopped production for Auto HEX
ALCAN Ravenswood	2008		32	Stopped production for Auto HEX
NOVELIS Saguenay/Fairmont	2012	160	20	Stopped production for Auto HEX
TOTAL		160 kt	81 kt	