AMETEK®
SPECIALTY METAL PRODUCTS
EIGHTY FOUR

ROLL-BONDED CLAD PLATE

ASTM certified roll-bonded clad metal plate for high performance pressure vessel applications.

Our multi-layer clad plate combines the superior properties of each metal to deliver significant advantages for pressure vessel manufacturers.

- ASTM A263, A264, and A265 certified
- 50 years of engineering expertise
- Roll-bonded for optimum strength
- Worldwide presence
- Wide range of alloys

MADE IN THE USA

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EXPERTISE FOR MORE THAN 50 YEARS

AMETEK Specialty Metal Products (SMP) employs an industry leading roll-bonding process to manufacture high quality, metallurgically bonded clad plate. Our multi-layered clad composite products deliver combinations of properties and advantages not available in monolithic metals. Roll-bonded clad delivers improved performance with the following advantages:

HIGH MECHANICAL STRENGTH

The combined high mechanical properties of clad metals achieves superior strength.

SUPERIOR METALLURGICAL BOND

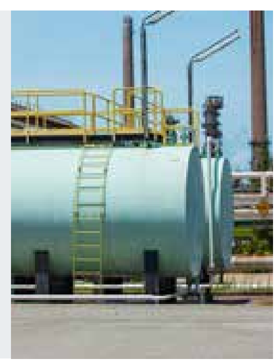
Our well-established roll bonding process ensures the robust and integral metallurgical bond.

EXCELLENT CORROSION RESISTANCE

We specialize in processing high corrosion resistant alloys and BPVC rated materials.

CUSTOM SIZES

AMETEK metallurgists develop tailor made solutions to meet your exacting product specifications.



SMALL LOT SIZES

We offer small minimum order quantities and short lead times.

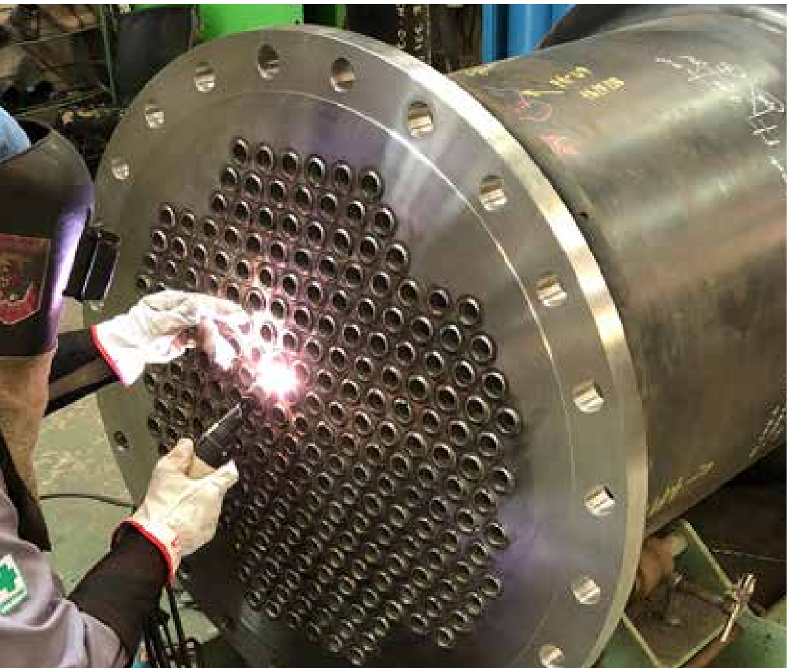
CERTIFICATION

In accordance with ASTM A-263, A-264 and A-265.

ROLL-BONDED CLAD PLATE

MARKETS

Roll-bonded clad plate for pressure vessels are used extensively in a wide range of industries: oil and gas, chemical processing, petroleum refining, pulp and paper, pharmaceutical, and power generation.



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MANUFACTURING

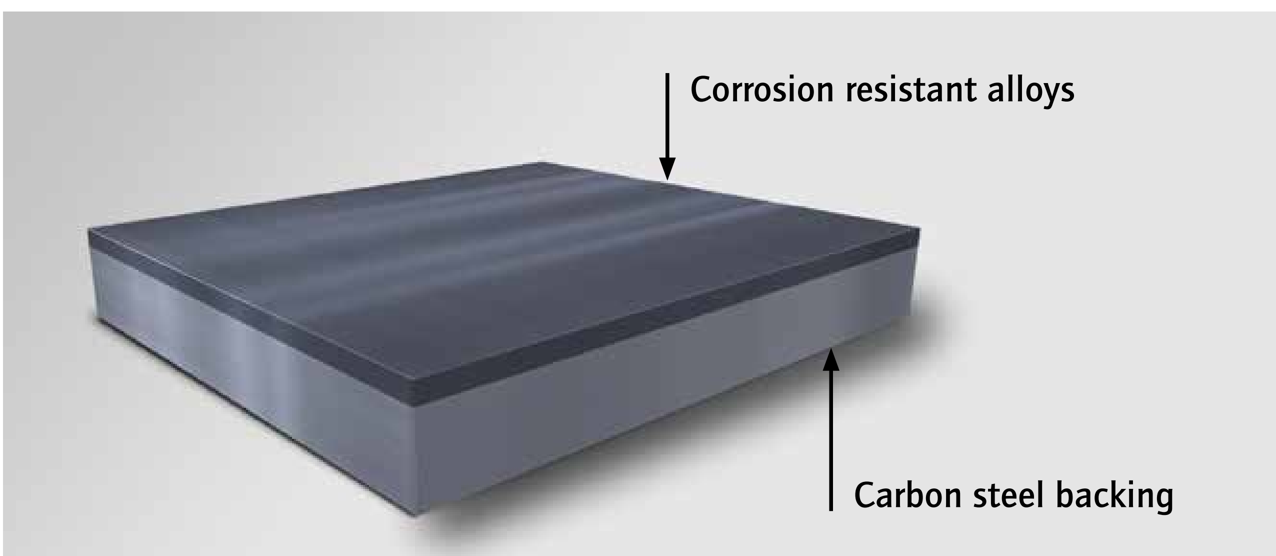
AMETEK SMP clad materials are manufactured by roll-bonding a thicker, high strength backing sheet with a thinner layer of a corrosion-resistant specialty alloy layer to produce a metallurgically bonded clad.

Many different alloys can be combined through this technique providing a custom metal with the combined superior properties of each metal in comparison to a monolithic plate.

PROCESSING

Roll-bonding is achieved by processing a specially prepared metal “sandwich” - made of layers of backing and cladding materials - through a conventional plate hot rolling mill. This high pressure and high temperature process compresses all metal plates and metallurgically bonds the backing material to the cladding material. After cutting to finish size, the bonded plates can be cleaned by blasting an abrasive mixed with glass beads to obtain a clean, relatively bright surface, both top and bottom, if desired.

CLAD PLATE (CORROSION RESISTANT ALLOYS/CARBON STEEL)



KEY FEATURES

- High corrosion resistance
- Good thermal conductivity
- Excellent bond strength
- Good weldability

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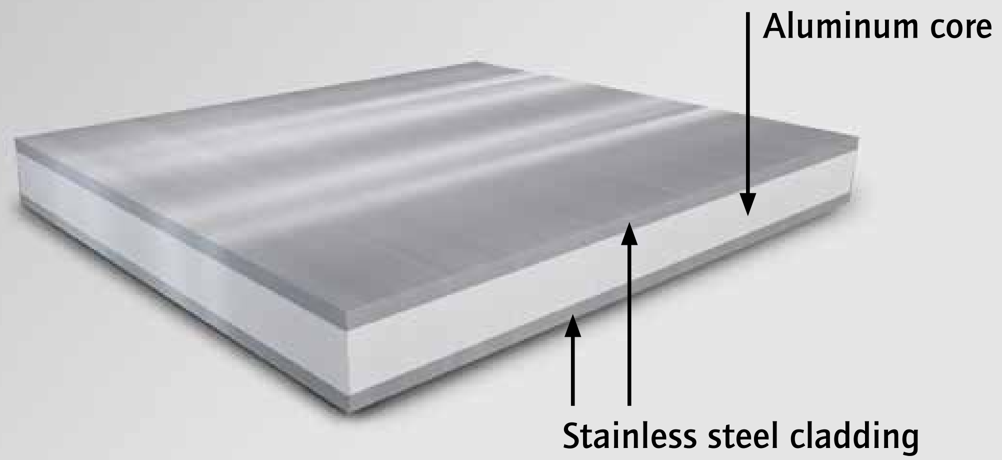
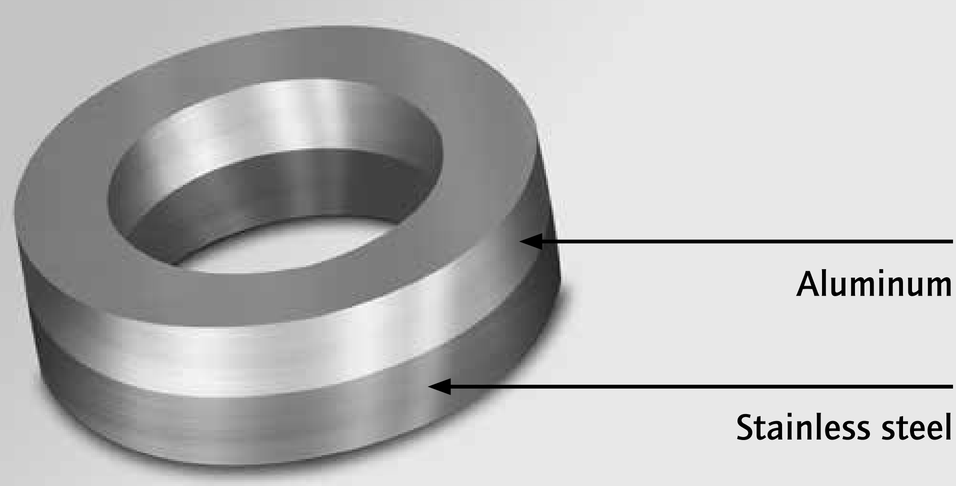
OTHER CLAD PLATE MATERIALS (FASTAL STAINLESS STEEL/ALUMINUM/STAINLESS STEEL)



KEY FEATURES

- Excellent hear transfer - up to 5 times faster
- Excellent bond strength
- Ability to saw cut
- Good weldability
- Even heating surface
- Outstanding corrosion resistance
- Clean more quickly, low maintenance

WELDABLE TRANSITION PLATE (STAINLESS STEEL/ALUMINUM OR CARBON STEEL /ALUMINUM)



KEY FEATURES

- High temperature resistance
- No galvanic corrosion
- Strong metallurgical bond between bimetallic plates
- No interlayers
- Eliminates need for mechanical fastening

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EXTENDED PRESSURE VESSEL OPERATING LIFE

High alloy clad products are ideally suited for pressure vessels, autoclaves and industrial boilers where corrosion resistance, pressure resistance and structural performance are critical. Our high-performance materials deliver extended operational life.

PRESSURE VESSEL APPLICATIONS

Our roll-bonded clad plate is engineered for the shell, header and transition pieces of pressure vessels and pressure tanks. Other applications include:

- Jacketed reactors
- Reactors vessels
- Mixing vessels
- Distillation towers
- Autoclaves
- Heat exchangers
- Vacuum tanks
- Customized formulation tanks
- Mobile mixing vessels
- Transfer tanks

STRUCTURAL TRANSITION JOINTS

High strength clad plate is used in a variety of industries for transition joints and allows for a weld free transition between stainless steel and aluminum. Our product is the recognized standard for stainless steel/aluminum transition joints, used for connecting superstructures and bulkheads to steel hulls, framing and decks and where ever a weldfree or flange free transition is desired.

3-LAYER CLAD

FASTAL is our premium quality, tri-metal composite material which combines an aluminum core sandwiched between two corrosion resistant cladding of stainless steel. Alloys include SS 304, 316, 430 and 436. FASTAL delivers the industry leading heat transfer rate with the following advantages:

- High induction rate - transfers heat up to 5 times faster
- Outstanding corrosion resistance
- Excellent bond strength and weldability
- Low maintenance

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QUALITY CONTROL AND TESTING

Clad plate can be produced to meet ASME specification such as BPVC II. To meet these specifications, AMETEK SMP uses certified materials and routinely performs tensile tests, shear tests, hardness, bend tests, ultrasonic testing and impact tests (Charpy V-Notch).

CLAD PLATE SIZE CHART

Thickness (in)	Width (in)	Length (in)	Sq Feet	Thickness (mm)	Width (mm)	Length (mm)	Sq Meter
0.25	98	699	478	6	2500	17750	44
0.375	98	699	478	10	2500	17750	44
0.5	98	640	437	13	2500	16250	41
0.625	98	433	296	16	2500	11000	28
0.75	98	378	258	19	2500	9600	24
0.875	98	320	219	22	2500	8125	20
1	98	260	178	25	2500	6600	17
1.25	98	197	135	32	2500	5000	13

TYPICAL CLAD MATERIALS

- Stainless clad / carbon steel
- Nickel clad / carbon steel
- Nickel alloy / clad carbon steel
- Stainless / aluminum clad
- Stainless / aluminum/stainless clad
- CRA / carbon steel clad

CLAD PLATE CAPABILITIES

- Thicknesses from 3/16" to 1" (4.76 to 25.4 mm)
- Widths to 98" (2,500 mm)
- Lengths to 540" (13,716 mm)
- Surface grinding (#3 & #4 finish)
- Normalizing & solution anneal
- Ultrasonic testing to SA 578
- % of clad: 5% to 40%
- Weight / plate: 8,000 lbs. max. (finished)

TYPICAL ALLOYS				
304L	410S	Monel® 400	Inconel® 825	Aluminum
316L	Nickel 200	Inconel® 625	Hastelloy® C276	

Custom grades are available.

ABOUT AMETEK SPECIALTY METAL PRODUCTS

AMETEK Specialty Metal Products (SMP) is a business unit of AMETEK, Inc. a leading global provider of industrial technology solutions serving a diverse set of attractive niche markets with annual sales over $6.0 billion.

The Specialty Metal Products business unit consists of five businesses and operating facilities in the United States and the United Kingdom.

These businesses are proven experts in the manufacture of advanced metallurgical products including roll-bonded clad plate, precision metal strip, ultra-thin foil, shaped wire, engineered components, thermal management materials, water atomized powders and precision tube.

Our high performance metal products are used around the world for critical applications in a range of industries including aerospace, automotive, defense, electronics, industrial, medical, nuclear, oil and gas, and space and satellites.

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