

## DESCRIPTION

ITW Pabco/Childers Aluminum Jacketing is the premier protective outer surface for mechanical insulation systems including pipe, vessels, and equipment. It protects the insulation and underlying pipe/vessel from physical damage, UV exposure, corrosive atmospheres, and water.

ITW Aluminum jacketing (also called cladding) is available in smooth, stucco embossed, and 3/16 corrugated (cross-crimped) finishes. For larger surfaces, box-rib and deep corrugated sheets are also available.

ITW Aluminum Jacketing has a bare outer surface and comes standard with a 3-mil thick polyfilm moisture barrier heat-laminated to the interior surface to help prevent corrosion of the jacketing and the underlying metal pipe, vessel, or equipment.

## COMPOSITION

Commercially pure aluminum is relatively soft and less suited for use in this application. Its strength can be greatly improved by alloying with small percentages of one or more other elements such as manganese, silicon, copper, zinc, and magnesium. Additional strength can be achieved by cold working. ITW Insulation Systems carefully screens all potential aluminum coil suppliers to assure our products have the highest quality, are corrosion resistant, and comply with all relevant standards.

ITW Aluminum Jacketing is typically manufactured using alloys 3105 or 3003 which have very similar composition and performance and are considered interchangeable for use as insulation jacketing. ITW reserves the right to ship whichever alloy is in stock at the time of order placement. One of these two specific alloys or an alternative alloy can be specified by purchaser at time of order placement but this may affect minimum quantity, lead-time, and price.

Composition Differences in Aluminum Alloys (%)

| Alloy | Cu       | Mn      | Mg      | Zn    |
|-------|----------|---------|---------|-------|
| 3105  | ≤ 0.3    | 0.3-0.8 | 0.2-0.8 | ≤ 0.4 |
| 3003  | 0.05-0.2 | 1-1.5   | ---     | ≤ 0.1 |

## COMPLIANCE TO STANDARDS

All bare and polyfilm lined Aluminum Jacketing from ITW Insulation Systems complies with the requirements of ASTM C1729 (Aluminum Jacketing

Material Standard) which includes the strength and chemical composition requirements for compliance to ASTM B209 (Aluminum Alloy Standard).

## RECOMMENDED USES

Aluminum Jacketing is recommended for use in all of the following insulation system applications:

- Standard outdoor use on all pipe, vertical tank insulation systems up to 8 ft outer diameter, and all horizontal tanks
- Indoor insulation system applications up to 8 ft outer diameter where increased damage resistance is desired

## LIMITATIONS ON USE

Aluminum Jacketing is not appropriate for the following applications:

- For vertical tank insulation system applications where the outer diameter is larger than 8 ft, ITW deep corrugated aluminum sheets should be used
- Where increased emissivity is desired, painted aluminum jacketing should be considered
- For applications where a maximum resistance to fire is required, stainless steel jacketing should be used
- For applications where additional resistance to corrosion from the external environment is required, ITW painted aluminum jacketing may be used. Where maximum resistance to corrosion is required, ITW stainless steel jacketing (T304 or T316) should be used.

## POLYFILM MOISTURE BARRIER

Polyfilm Moisture Barrier (PFMB) is an engineered three layer coextruded film of polyethylene and Surlyn\* polymers with a total film thickness of 3 mils (76 μm) that is heat laminated in the factory to the interior surface of aluminum jacketing. ITW recommends the use of PFMB on all aluminum jacketing to help prevent pitting, crevice, and galvanic corrosion of the interior surface of the metal jacketing and the insulated pipe, tank, or equipment.

Due to its superior performance characteristics, PFMB replaces the old moisture barrier technology of 1 to 3 mil thick polykraft

## RECOMMENDED THICKNESS

ITW recommends that the thickness of aluminum jacketing used vary based on the outer diameter of the insulation system per the requirements of ASTM C1729. This recommended thickness is shown in the table below.

## EMITTANCE

ITW Aluminum Jacketing has an outer surface emittance per ASTM C1371 and specified by ASTM C1729 of:

- Bare aluminum (oxidized in service) = 0.1

## SURFACE FINISHES

Each of the three surface finishes available for ITW Aluminum Jacketing (smooth, stucco embossed, and 3/16" corrugated) has applications where it is recommended. All of these can be supplied with a painted exterior. For more information on this, consult the ITW data sheet on painted aluminum jacketing.

### Smooth (Plain Mill) Finish

This is a very popular finish and is the "default" for the many end-users/specifiers who prefer the clean look of this finish. This finish sheds rain water the best. However, this smooth surface readily shows damage such as from hail or other physical abuse. It also shows the dirt more than the other finishes due to its smoothness. Lastly, it is highly reflective of sunlight and when located near roadways, some specifiers see this reflection as a possible safety hazard.

### Stucco Embossed Finish

This is another popular finish used for aluminum jacketing. The stucco-like surface texture hides small imperfections and scratches caused by physical damage during or after installation. This finish also reduces reflectivity while still looking very professional. Lastly, the use of stucco embossed finish provides a small increase to the rigidity and strength of the aluminum jacketing.

### 3/16" Corrugated (Cross-Crimped) Finish

This finish consists of parallel grooves or crimps about 3/16" apart running in the length direction of the pipe. This finish also hides small damage and scratches to the jacketing and reduces sunlight reflection. In addition, the nature of this finish gives the aluminum jacket more ability to expand and contract to adapt to insulation movement caused by pipe or ambient temperature changes. Lastly, the rigidity and strength of 3/16" corrugated finish is substantially increased making it ideal for use as jacketing on large diameter pipe and vessels up to 8 ft diameter. This finish is available in a maximum thickness of 0.024 inches.

## FLAMMABILITY

ITW Aluminum Jacketing with a 3 mil polysurlyn moisture barrier has been tested for flammability using the industry standard ASTM E84 test method. The results were:

ASTM E84 Flame Spread Index = 0  
 ASTM E84 Smoke Developed Index = 5

(Tested with exterior metal surface exposed to the flame)

| Outer Insulation Diameter (in) | Minimum Aluminum Jacket Thickness, inches (mm) |                      |
|--------------------------------|--|----------------------|
|                                | Rigid Insulation                               | Non-Rigid Insulation |
| ≤ 8                            | 0.016 (0.41)                                   | 0.016 (0.41)         |
| Over 8 thru 11                 | 0.016 (0.41)                                   | 0.020 (0.51)         |
| Over 11 thru 24                | 0.016 (0.41)                                   | 0.024 (0.61)         |
| Over 24 thru 36                | 0.020 (0.51)                                   | 0.032 (0.81)         |
| >36                            | 0.024 (0.61)                                   | 0.040 (1.01)         |