

PRODUCT SPECIFICATION

Manufacture of insulating metal panels for walls and roofs

PART 1

1.1 PRODUCTS

- A. Wall: ISOPARETE, ISOPARETE VINILE, ISOBOX, SUPER ISOBOX, ISOBOX VINILE
- B. Roof: ISOCOP, ISOGRECATA, ISODECK SYNTH, ISOVINILE, ISODECK PVSTEEL / TPO

1.2 CERTIFICATIONS / REFERENCES

A. ASTM International

1. ASTM A90: Standard test method for weight (mass) of coating iron and steel articles with zinc or zinc-alloy coatings.
2. ASTM A653: Standard specification for steel sheet, Zinc-coated (galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip process.
3. ASTM A924: Standard specification for general requirements for steel sheet, metallic-coated by the hot-dip process.
4. ASTM A1030: Standard practice for measuring flatness characteristics of coated sheet products
5. ASTM B117: Standard practice for operating salt spray (Fog) apparatus
6. ASTM C272: Standard test method for water absorption of core materials for sandwich constructions
7. ASTM C273: Standard test method for shear properties of sandwich core materials
8. ASTM C518: Standard test method for steady-state thermal transmission properties by means of the heat flow meter apparatus
9. ASTM D968: Standard test methods for abrasions resistance of organic coatings by falling abrasive
10. ASTM D1621: Standard test method for compressive properties of rigid cellular plastics
11. ASTM D1622: Standard test method for apparent density of rigid cellular plastics
12. ASTM D1623: Standard test method for tensile and tensile adhesion of rigid cellular plastics
13. ASTM D1929: Standard test method for determining ignition temperature of plastics.
14. ASTM D2244: Standard practice for calculation of color tolerances and color differences from instrumentally measured color coordinates
15. ASTM D2247: Standard practice for testing water resistance of coatings in 100 percent relative humidity
16. ASTM D2794: Standard test method for resistance of organic coatings to the effects of rapid deformation (impact)
17. ASTM D3273: Standard test method for resistance to growth of mold on the surface of interior coatings in an environmental chamber.
18. ASTM D3359: Standard test methods for measuring adhesion by tape test
19. ASTM D3363: Standard test method for film hardness by pencil test
20. ASTM D6226: Standard test method for open cell content of rigid cellular plastics
21. ASTM E72: Standard test methods of conducting strength tests of panels for building construction
22. ASTM E84: Standard test method for surface burning characteristics of buildings materials
23. ASTM E108: Standard test methods for fire test of roof coverings,
24. ASTM E331: Standard test method for water penetration of exterior windows, skylights, doors, and curtain walls by uniform static air pressure difference

B. FM Global

1. FM 4880: Class 1 Fire rating of insulated wall or wall and roof/ceiling panels, interior finish materials of coatings, and exterior wall systems.
2. FM 4881: Approval standard for class 1 exterior wall systems.
3. FM 4471: Approval standard for class 1 panel roofs.

C. ICC-ES Evaluation

1. DIVISION: 07 00 00- Thermal and moisture protection section 07 40 00 – Roofing and siding panels

D. International Organization for Standardization (ISO)

1. ISO 9001: Quality system management

E. International Building Code (IBC): Actual edition

1.3 SUBMITTALS:

- A. Product Data: Submit manufactured technical data/literature for each type of product.
- B. Technical drawings: submit drawings showing
 - 1. Profile
 - 2. External and internal steel gauge
 - 3. Layout and panel dimensions
 - 4. Location and type of fasteners
 - 5. Installation sequence
 - 6. Other details as may be required for a weathertight installation
- C. Submittal quality assurance
 - 1. Quality certificate:
 - a) Information on the product and production batch
 - b) Information on internal and external steel characteristics
 - c) Information on the characteristics of the insulated core
 - 2. Mounting recommendations: IsoCindu will supply installation recommendations, including storage, handling and maintenance recommendations
- D. Panel analysis: IsoCindu provide panel calculations to verify panels will withstand the design wind loads indicated without detrimental effects or deflection exceeding the specified limit. Include effects of thermal differential between the exterior and interior panel facings and resistance to fastener pullout.
- E. Samples: IsoCindu provide samples of 3 x 5 in to every color that client required

1.4 QUALITY ASSURANCE

- A. Manufacturer qualifications:
 - 1. Manufacturer shall have a minimum of three (3) years experience in the production of roof and wall insulated metals panels. Manufacturer shall demonstrate this experience with examples of similar projects.
 - 2. Manufacturer has a quality management system in accordance with ISO 9001 for insulated panels

1.5 DELIVERY, STORAGE AND HANDLING

- A. In case the material is covered by the protective film, it must be completely removed during assembly and, in any case, no more than sixty (60) days after the delivery date.
- B. The panels will be delivered packed with a protective plastic film, no openings, undamaged packaging, identified with intact and unique labels.
- C. The best storage conditions are in closed rooms, with little ventilation, free of humidity and dust. In any case, and in particular, for the storage of the site, it is necessary provide a suitable and stable support surface, which does not allow stagnation of water.

1.6 WARRANTY

- A. IsoCindu guarantees to customer the conformity of the products with respect to specifications contained in the catalogs and/or technical data sheet (latest edition), likewise, the lack of defects in material processing of the products, within the tolerance of use of the limits of technical specifications for the same.
- B. Limited warranty: The manufacturer agrees to repair or replace items that fail in materials within specified warranty period. The warranty only covers bond integrity, deflection and buckling.
 - 1. Warranty period: ninety (90) natural days from date of products delivery, in no case can it be extended or suspended.
- C. Storage warranty: The products have a storage time warranty, the manufacturer undertakes to safeguard the integrity of the packages.
 - 1. Warranty period: Fifteen (15) natural days following receipt by the buyer of the notice of ready goods communicated by the manufacturer.

PART 2 / Products

2.1 MANUFACTURER

A. ISOCINDU SA DE CV (www.isocindu.mx / www.isocindu.com)

1. Libre comercio avenue #137 Santa Fe III, Puerto Interior, C.P. 36275, Silao, Guanajuato, México.

2.2 EXTERIOR AND INTERIOR WALLS AND ROOFS PANELS

A. Design criteria:

1. Wind Loads: As indicated on drawings panel wind map for Isocop and Isoparete
2. Deflection criteria shall be (L/180) it is possible to send the customer the deflection of the panel under given conditions.

B. Performance criteria:

1. Structural test:

- a. Static: Structural shall be verifiable by witnessed structural testing for simulated wind loads in accordance with ASTM E72.
- b. Cyclic: Tested construction meet approval criteria of FM 4881 at + 70 / -70 psf for TC zones when installed as specified in the listing.

2. Measurement of the water resistance of the single wall at a cyclical pressure according to the SIST EN 12865:2002 test, the sample corresponds to class B according to the SIST EN 14509:2007 standard.

3. Thermal performance: Polyisocyanurate (PIR) core panels shall provide the following R-Values as tested in accordance with ASTM C518 at 35-degree F mean temperature, the values are:

a.	Panel thickness 2 in:	R - 15.75
b.	Panel thickness 2.5 in:	R - 19.69
c.	Panel thickness 3 in:	R - 23.62
d.	Panel thickness 4 in:	R - 31.50
e.	Panel thickness 5 in:	R - 39.37
f.	Panel thickness 6 in:	R - 47.24
g.	Panel thickness 8 in:	R - 62.99

4. Fires test response characteristics: steel-face panels with polyisocyanurate (PIR) core have been tested, obtaining the following results:

a. FM 4880, 4881 and 4471: Class I rated per FM global, surface burning characteristics of unfaced foam core when tested in accordance with ASTM E84:

1. Flame spread: less than 25 or less.
2. Smoke developed: less than 250 or less.

5. Insulating core: Polyisocyanurate (PIR) core, with the following minimum physical properties:

- a. Density nominal per ASTM D1622: 2.36 pcf
- b. Tensile strength per ASTM C273: 17.4 psi
- c. Compressive strength per ASTM D1621: 17.4 psi
- d. Closed cell content per ASTM D6226: 95% minimum
- e. FM global approvals: Class 1 per FM 4880, 4881 and 4471

C. Exterior paint finish characteristics for panels:

1. Gloss: 30 ± 6 measured at 60-degree angle tested in accordance with ASTM D523.
2. Pencil Hardness: F minimum tested in accordance with ASTM D3363.
3. Flexibility, T-Bend: 2T bend with no adhesion loss when tested in accordance with ASTM D4145.
4. Adhesion, T-Bend: 2T bend with no adhesion loss when tested in accordance with ASTM D4145.
5. Adhesion: No adhesion loss tested in accordance with ASTM D3359

- 6. Reverser impact: 3x inch-pound metal thickness, no cracking or adhesion loss in accordance with ASTM D2794
- 7. Abrasion resistance: Total sand = 20 ± 5 liters in accordance with ASTM D968.
- 8. Humidity resistance: Passes 1,000 hours at 100% relative humidity without blistering
- 9. Chalk resistance: In vertical angle at 90 degrees in 5 years, classification no less than 6 in accordance with ASTM D659
- 10. Color tolerances: Maximum 5 ΔE hunter units in a maximum of 5 years.

D. Exterior aggregate finish characteristics:

- 1. Salt spray: 1,000 hours, without blistering. Trace slippage $\leq 1/8$ inch (3mm)
- 2. Flame spread: Less than 25, Class 1 rating when tested in accordance with ASTM E84

E. Panel Assembly:

1. Panel Thickness:

- a. Wall: 1 5/8 inches, 2 inches, 2.5 inches, 3 inches, 4 inches, 5 inches, 6 inches and 8 inches.
- b. Roof: 1 inches, 1.5 inches, 2 inches, 3 inches, 4 inches, 5 inches, 6 inches and 8 inches.

2. Panel width: For wall panels width of 39.37 inches and 45.27 inches for super Isoibox, for roof panels width of 39.37 inches

3. Panel joint shall consist of fastener and attachment clip hidden or visible depending on the case. The panel joint has a gasket in the female side along the entire length of the panel, which helps to eliminate the thermal bridging.

4. External face of the panel:

a. Material:

- 1. Coil material shall be in accordance with ASTM A755: product Galvanized by continuous hot dip process. Steel grade SS 33, SS 37, SS 40 in accordance with ASTM A653 and galvanized Z180 and Z275 in accordance with ASTM A653
- 2. Gauge: 24 in steel, 26 in steel and 28 in steel.

b. Profile: flat or striated

- 1. The flat profile does not have channels or profiles, the tolerance of undulations of this profile is 0.6 mm in a length of 200 mm.
- 2. The striated profile can be plisse or box; it consists of parallel lines on the face of the panel with a depth of 0.8 to 1.5 mm located along the length of the panel

c. Exterior texture: smooth and embossed

d. Exterior paint finish color:

- 1. Simil RAL 9010 and Simil RAL 9002, for more colors it is necessary to connect a IsoCindu seller.
- 2. Finish system:

- a. Standard polyester (PS): two coat system of polyester resin with a total thickness of 18 to 20 microns
- b. modified silicone polyester: Two coat system with a total thickness of 50 to 60 microns
- c. Fluoropolymer (PVDF): Two or three coat system with a total thickness of 50 to 60 microns.

5. Internal face of the panel:

a. Material:

- 1. Coil material shall be in accordance with ASTM A755: product Galvanized by continuous hot dip process. Steel grade SS 33, SS 37, SS 40 in accordance with ASTM A653 and galvanized Z180 and Z275 in accordance with ASTM A653
- 2. Gauge: 24 in steel, 26 in steel and 28 in steel.

b. Profile: flat or striated

1. The flat profile does not have channels or profiles, the tolerance of undulations of this profile is 0.6 mm in a length of 200 mm.
2. The striated profile can be box; it consists of parallel lines on the face of the panel with a depth of 0.8 to 1.5 mm located along the length of the panel

c. Exterior texture: smooth and embossed

d. Exterior paint finish color:

1. Simil RAL 9010 and Simil RAL 9002, for more colors it is necessary to connect a IsoCindu seller.
2. Finish system:
 - a. Standard polyester (PS): two coat system of polyester resin with a total thickness of 18 to 20 microns
 - b. Modified silicone polyester: Two coat system with a total thickness of 50 to 60 microns
 - c. Fluoropolymer (PVDF): Two or three coat system with a total thickness of 50 to 60 microns.

6. Insulating core: The core material can be polyurethane (PUR) or polyisocyanurate (PIR) foam.

2.3 ACCESSORIES

A. Fasteners: Fasteners as recommended by manufacturer, for more information contact a IsoCindu seller.

B. Clips:

1. Wall: Shall be made from a minimum of 14-gauge steel, grade SS 37 with S275 galvanized in accordance of ASTM A653
2. Roof: Shall be made from a minimum of 16-gauge steel, grade SS 37 with S275 galvanized in accordance of ASTM A653

C. Perimeter trim:

1. Fabricated perimeter trim and metal flashing shall be same gauge, material and coating color as exterior face of insulated metal wall panel.

D. Butyl sealed: It is recommended to put butyl in the joints of the panels according to manufacturing recommendations

PART 3 / Ejecution

3.1 EXAMINATION

A. Examine individual panels upon removing from the bundle; notify manufacturer of panel defects. Do not install defective panels.

3.2 PANEL INSTALLATION

A. Installation shall be in accordance with manufacturer´s installation guidelines and recommendations