

**Metal Sales
Manufacturing Corporation**

This specification data sheet is provided by Metal Sales as a technical support tool incident to the sale of its Structural Standing Seam Steel Roof Panel products. Contact Metal Sales for more information on these and other products.

Section 07 41 13 - METAL ROOF PANELS

1. PRODUCT NAME

Magna-Loc, Curved Magna-Loc 180, Seam-Loc 24, Snap-Loc 24, Vertical Seam, and Clip-Loc structural standing seam steel roof panels

2. MANUFACTURER

Metal Sales Manufacturing Corporation
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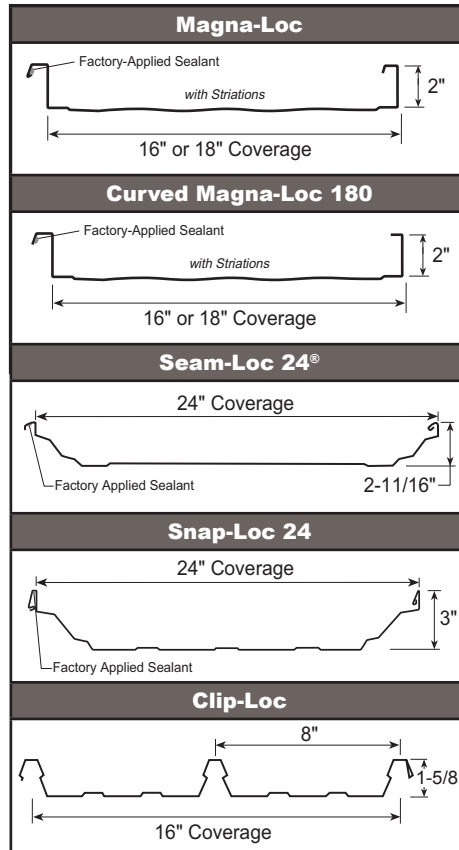
3. MANUFACTURER DESCRIPTION

Basic Use

For more than 50 years, Metal Sales has earned a reputation as the premier provider of metal building components and accessories. Metal Sales maintains the industry's largest professional sales and service team, supported by 21 branches located throughout the United States and offers a full line of high quality metal roof and wall panels for agricultural, commercial, architectural, industrial and residential projects of every shape and size for both new construction and retrofit applications. Metal Sales is dedicated to leading the metal building component industry, by setting new standards for operating efficiency, product design, active service management and lasting value.

Manufacturer Memberships and Affiliations

CRRC - Cool Roof Rating Council
MCA - Metal Construction Association
CSI - Construction Specifications Institute
NRCA - National Roofing Contractors Association
ILFI - International Living Future Institute
ENERGY STAR® Partner



4. TECHNICAL DATA

Applicable Standards

- ASTM International (ASTM)
- ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - ASTM A 792 - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
 - ASTM D 4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
 - ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - ASTM E 1514 - Standard Specification for Structural Standing Seam Steel Roof Panel Systems.
 - ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
 - ASTM E 1637 - Standard Specification for Struc-



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tural Standing Seam Aluminum Roof Panel Systems.

- ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
- ASTM E 1680 - Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems.
- ASTM E 2140 - Standard Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head.
- Sheet Metal and Air Conditioning Contractors' National Association (SMACNA): "Architectural Sheet Metal Manual".
- Factory Mutual (FM): FM Approval 4471:
- UL 263 - Fire Tests of Building Construction and Materials.
- UL 580 - Tests For Uplift Resistance of Roof Assemblies.
- UL 790 - Standard Test Methods for Fire Tests of Roof Coverings.
- UL 2218 - Impact Resistance of Prepared Roof Covering Materials.

Approval Organizations:

Factory Mutual
Miami-Dade County
Florida Building Code 2014
Texas Department of Insurance
ICC Evaluation Service

UL Physical Properties:

Test reports are available to design professionals upon request.

Note: Industry designation for material thickness is moving away from "gauge" to "nominal thickness" in inches. Manufacturer's available panel thickness is 0.022 inch (formerly 26 ga.) or 0.028 inch (formerly

24 ga.) or 0.034 inch (formerly 22 ga.). Manufacturer recommends use of a “minimum coated thickness” requirement of 0.023 inch (0.58 mm) instead of 24 ga., and 0.0296 inch (0.75 mm) instead of 22 ga.

Technical Properties for Magna-Loc:

- ▶ Panel Coverage: 16 inches (406.4 mm) or 18 inches (457.2 mm)
- ▶ Rib Height: 2 inches (50.8 mm)
- ▶ Material: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, Class AZ50 coating designation, Grade 50, structural quality, 0.028 inch (0.71 mm) or 0.034 inch (0.86 mm) nominal thickness
- ▶ Minimum Roof Slope Capability: 1/2:12
- ▶ Sealant: Factory-applied side lap sealant
- ▶ Side Lap: Mechanically seamed
- ▶ Attachment: Concealed clip designed for thermal movement
- ▶ Insulation Capacity: Accommodate blanket insulation 1/2 inch to 6 inches (12.7 to 152.4 mm) thickness
- ▶ Application: Applied over open framing or solid substrate.
- ▶ Surface Finish: PVDF or Acrylic-Coated Galvalume®
- ▶ Color: See list of available colors. Contact Metal Sales for more information.
- ▶ Testing: Fire Resistance Rating: UL 263 and UL 790 Class A Fire Resistance Rating per assembly. Impact Resistance: UL 2218 Class 4. Air Infiltration: Tested according to ASTM E 1680 Water Infiltration: No leakage when tested according to ASTM E 1646 and ASTM E 2140. Wind Uplift Resistance: Tested according to ASTM E 1592 and in compliance with UL 580, Class 90.
- ▶ Code and Testing Agency Approvals: Factory Mutual Approved Class 1-90, 1-105, 1-165 (FM Approval 4471: Class 1 Panel Roofs). Miami-Dade County Approved (NOA 18-0901.01, 18-0901.02). 2017 Florida Building Code Approved: FL10999.2, FL10999.5, FL11560.6, and FL11560.7. ICC-ES Evaluation Report: ESR-2385. Texas Windstorm Evaluation RC-197. UL Construction #506, 506A, 506B.

Technical Properties for Curved Magna-Loc 180:

- Curving of Magna-Loc 180 panels may be performed in the factory or on project site.
- ▶ Panel Coverage: 16 inches (406.4 mm).
 - ▶ Rib Height: 2 inches (50.8 mm).
 - ▶ Material: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, Class AZ50 coating designation, Grade 50, structural quality, 0.028 inch (0.71 mm) nominal thickness.
 - ▶ Minimum Radius: 20 feet (6.1 m).



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- ▶ Sealant: Pre-applied side lap sealant.
- ▶ Side Lap: Mechanically seamed.
- ▶ Attachment: Concealed clip designed for thermal movement.
- ▶ Application: Applied over open framing or solid substrate.
- ▶ Surface Finish: PVDF or Acrylic-Coated Galvalume®.
- ▶ Color: See list of available colors. Contact Metal Sales for more information.
- ▶ Testing:
 - Fire Resistance Rating: UL 263 and UL 790 Class A Fire Resistance Rating per assembly.
 - Impact Resistance: Comply with UL 2218 Class 4
 - Air Infiltration: Tested according to ASTM E 1680.
 - Water Infiltration: Tested according to ASTM E 1646.
 - Wind Uplift Resistance: Tested according to ASTM E 1592 and in compliance with UL 580, Class 90.
- ▶ Code and Testing Agency Approvals: 2017 Florida Building Code Approved: FL10999.6. ICC-ES Evaluation Report: ESR-2385. UL Construction #576, 577, and 583.

Technical Properties for Seam-Loc 24:

- ▶ Panel Coverage: 18 inches (457.2 mm) or 24 inches (609.6 mm).
- ▶ Rib Height: 2-11/16 inches (68.3 mm).
- ▶ Material: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, Class AZ50 coating designation, Grade 50, structural quality, 0.028 inch (0.71 mm) or 0.034 inch (0.86 mm) nominal thickness.
- ▶ Minimum Roof Slope Capability: 1/4:12.
- ▶ Sealant: Factory-applied side lap sealant.
- ▶ Attachment: Concealed clip designed for thermal movement.
- ▶ Side Lap: Mechanically-seamed panel system.
- ▶ Insulation Capacity: Accommodate blanket insulation 1/2 inch (12.7 mm) to 6 inches (152.4 mm)

thickness.

- ▶ Application: Applied over open framing or solid substrate.
- ▶ Surface Finish: PVDF or Acrylic-Coated Galvalume®.
- ▶ Color: See list of available colors. Contact Metal Sales for more information.
- ▶ Testing:
 - Fire Resistance Rating: UL 263 and UL 790 Class A Fire Resistance Rating per assembly. Impact Resistance: UL 2218 Class 4. Air Infiltration: Tested according to ASTM E 1680. Water Infiltration: Tested according to ASTM E 1646. Wind Uplift Resistance: Tested according to ASTM E 1592 and in compliance with UL 580, Class 90 Wind Uplift, Construction #197 and 197A.
- ▶ Code and Testing Agency Approvals: Factory Mutual Approved Class 1-90, 1-165. 2017 Florida Building Code Approved: FL10999.8 and FL10999.9. UL Construction #197 and 197A .

Technical Properties for Snap-Loc 24:

- ▶ Panel Coverage: 24 inches (609.6 mm)
- ▶ Rib Height: 3 inches (76.2 mm).
- ▶ Material: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, Class AZ50 coating designation, Grade 50, structural quality, 0.028 inch (0.71 mm) or 0.034 inch (0.86 mm) nominal thickness.
- ▶ Minimum Roof Slope Capability: 1/4:12.
- ▶ Sealant: Factory-applied side lap sealant.
- ▶ Attachment: Concealed clip designed for thermal movement.
- ▶ Side Lap: Snap-together panel system.
- ▶ Insulation Capacity: Accommodates blanket insulation 1/2 inch (12.7 mm) to 6 inches (152.4 mm) thickness.
- ▶ Application: Applied over open framing or solid substrate.
- ▶ Surface Finish: PVDF or Acrylic-Coated Galvalume®.
- ▶ Color: See list of available colors. Contact Metal Sales for more information.
- ▶ Testing: Fire Resistance Rating: UL 263 and UL 790 Class A Fire Resistance Rating per assembly. Impact Resistance: UL 2218 Class 4. Air Infiltration: Tested according to ASTM E 1680. Water Infiltration: Tested according to ASTM E 1646. Wind Uplift Resistance: Tested according to ASTM E 1592 and in compliance with UL 580, Class 90. Uniform Static Air Pressure Difference: As tested in compliance with ASTM E 330.
- ▶ Code and Testing Agency Approvals: UL Construction #240.

Technical Properties for Clip-Loc:

- ▶ Panel Coverage: 16 inches (406.4 mm)
- ▶ Rib Height: 1-5/8 inches (41.3 mm).
- ▶ Material: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, Class AZ50 coating designation, Grade 50, structural quality, 0.022 inch (0.56 mm), 0.028 inch (0.71 mm) or 0.034 inch (0.86 mm) nominal thickness.
- ▶ Minimum Roof Slope Capability: 1:12.
- ▶ Attachment: Concealed clip designed for thermal movement.
- ▶ Insulation Capacity: Accommodates blanket insulation up to 4 inches (101.6 mm) thickness.
- ▶ Side Lap: Snap-together panel system.
- ▶ Application: Applied over open framing or solid substrate.
- ▶ Surface Finish: PVDF or Acrylic-Coated Galvalume®.
- ▶ Color: See list of available colors. Contact Metal Sales for more information.
- ▶ Testing: Fire Resistance Rating: UL 263 and UL 790 Class A Fire Resistance Rating per assembly. Impact Resistance: UL 2218 Class 4. Air Infiltration: Tested according to ASTM E 1680. Water Infiltration: Tested according to ASTM E 1646. Wind Uplift Resistance: Tested according to ASTM E 1592 and UL 1897, and in compliance with UL 580, Class 90 Wind Uplift, Constructions #586, 586A.
- ▶ Code and Testing Agency Approvals: ICC-ES Evaluation Report: ESR-2385. UL Construction #586, 586A.

Environmental Considerations

Construction metals generally are readily recyclable at the end of their service life. The raw materials used in manufacture of standing seam panels also come from recycled sources. Post industrial and post consumer recycled content varies.

Fire Performance

Flame-Spread Index: 25 or less (Class A), or 200 or less (Class C).
Smoke-Developed Index: 450 or less.

5. INSTALLATION

Handling and Storage

Handle and store product according to Metal Sales recommendations. Deliver materials in original, unopened, undamaged containers with identification labels intact. Store materials above ground, under waterproof covering, protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Provide proper ventilation of metal panel system to prevent condensation build-up between each panel

and trim or flashing component. Store metal panel products in manufacturer’s unopened packaging until ready for installation. Exercise caution in unloading and handling metal panel system to prevent bending, warping, twisting and surface damage.

Preparation

Install substrate boards over roof deck and sheathing over entire roof surface using recommended fasteners. Install furring, eave angles, sub-purlins and other miscellaneous roof panel support members and anchor according to metal roof panel manufacturer’s recommendations. Ensure panel support is in-plane. Limit in-plane variance to no more than a total of 1/4 inch (6mm) on 10 feet (3.05 m).

Underlayment Installation

Install self-adhering sheet underlayment and felt underlayment as required. Apply slip sheet over underlayment prior to installing metal roof panels. Install flashing in compliance with requirements in Division 07 Section “Sheet Metal Flashing and Trim.”

Thermal Insulation Installation

Install polyethylene vapor retarder if required. Install board insulation if required, in compliance with installation requirements in Division 07 Section “Thermal Insulation.”

Install blanket insulation if required, in compliance with installation requirements in Division 07 Section “Thermal Insulation.”

Metal Roof Panel Installation

Verify that site conditions are acceptable for installation. Do not proceed with installation until unacceptable conditions are corrected. Comply with panel manufacturer’s installation instructions including but not limited to special techniques, interface with other work and integration of systems. Fasten metal roof panels to supports with concealed clips at each

standing-seam joint at location, spacing and using proper fasteners as recommended by panel manufacturer. Comply with installation tolerances.

Accessory Installation

Install accessories using techniques recommended by manufacturer and which will assure positive anchorage to building and weather tight mounting. Provide for thermal movement. Coordinate installation with flashings and other components. For Flashing and Trim, comply with performance requirements, manufacturer’s written installation instructions and the SMACNA “Architectural Sheet Metal Manual”. Provide concealed fasteners where possible, and install units to true level. Install work with laps, joints and seams that will be permanently watertight. Metal Sales recommends S-5! non-penetrating systems for the attachment of snow guards and solar panels.

Field Quality Control

If requested by Owner, provide manufacturer’s field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer’s instructions.

Precautions, Cleaning and Protection

Touch-up paint is used to cover and protect unexpected scratches on the paint finish that may occur during installation of panel. Touch-up paint will not weather as well or at the same rate as the original system. Test in an area that will not be noticeable. Metallic paint colors are available at an additional charge. Minor differences in color and appearance are normal and to be expected.

To minimize possible differences in appearance, an entire project should be painted at one time, from one batch of paint, using the same application equipment. Additionally, fabricated panels, flat



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sheet and flashings should be oriented in the same direction.

After installation remove temporary coverings and protection of adjacent work areas. Repair or replace any installed products that have been damaged. Clean installed panels in accordance with manufacturer's instructions prior to Owner's acceptance. Remove and lawfully dispose of construction debris from Project site. Protect installed product and finish surfaces from damage during construction.

Building Codes

Current data on building code requirements and product compliance may be obtained from Metal Sales technical support specialists. Installation must comply with the requirements of authority having jurisdiction.

6. AVAILABILITY AND COST

Availability

Metal Sales products are nationally distributed and supported from 21 convenient locations nationwide, including Alaska. Metal Sales has the ability to ship worldwide. Contact Metal Sales for information on local availability.

Cost

Budget installed cost information may be obtained from a local Metal Sales distributor or through the manufacturer.

7. WARRANTIES

Weather Tightness Warranty

Metal Sales Weather Tightness Warranty is available in several forms. Request sample warranty documents from manufacturer for review and editing assistance. Warranty Period is optionally 5, 10 or 20 years.

Type 1 Warranty:

Side lap warranty only, with dollar limit.

Type 2 Warranty:

Trim and side lap warranty, with dollar limit.

Type 3 Warranty:

Side lap warranty only, with no dollar limit.

Type 4 Warranty:

Trim and side lap warranty, with no dollar limit.

Premier Plus Warranty:

Single-source warranty, with no dollar limit.

Paint Finish Warranty

Metal Sales standard PVDF (Fluorocarbon) System Warranty for film integrity, chalk rating and

fade rating in which manufacturer agrees to repair or replace panels that show evidence of deterioration within specified warranty period. Deterioration shall include, but is not limited to, color fading of more than 5 Hunter units when tested according to ASTM D 2244, chalking in excess of a No. 8 rating when tested according to ASTM D 4214 or cracking, checking, peeling or failure of paint to adhere to bare metal. Warranty Period for film integrity is 45 years and for chalk and fade rating is 35 years. Metal Sales warranty excludes failure due to physical damage and exposure to salt air environments.

8. MAINTENANCE

No specific maintenance is required for properly installed Metal Sales standing seam panel products. Periodic roof inspection to verify system integrity, drainage functionality and repair of storm damage is advised.

9. TECHNICAL SERVICES

Technical assistance, including more detailed information, product literature, test results, project lists, assistance in preparing project specifications and arrangements for application supervision, is available by contacting Metal Sales.

10. FILING SYSTEMS

Additional product information is available from the manufacturer upon request. Metal Sales product information may be found in McGraw-Hill Sweets, BSD SpecLink and Arcom MasterSpec.

Seam-Loc 24 is a registered trademark of Metal Sales.



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