

## Metal Sales Manufacturing Corporation

This specification data sheet is provided by Metal Sales Manufacturing Corporation as a technical support tool incident to the sale of its T-Armor Series Roof Panel products. Contact Metal Sales for more information on these and other products.  
 Telephone: 800.406.7387  
 Web: metalsales.us.com

Section 07 41 13 - METAL ROOF PANELS

### 1. PRODUCT NAME

T-Armor Series 2-3/8" and T-Armor Series 3" structural standing seam steel roof panels.

### 2. MANUFACTURER

Metal Sales Manufacturing Corporation  
 545 South 3rd Street, Suite 200  
 Louisville, KY 40202  
 Toll Free: 800.406.7387  
 Phone: 502.855.4300  
 Fax: 502.855.4200  
 Web: metalsales.us.com  
 E-Mail: info@metalsales.us.com

### 3. PRODUCT 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  
 MRA - Metal Roofing Alliance  
 NRCA - National Roofing Contractors Association  
 USGBC - United States Green Building Council  
 ENERGY STAR® Partner

### 4. TECHNICAL DATA

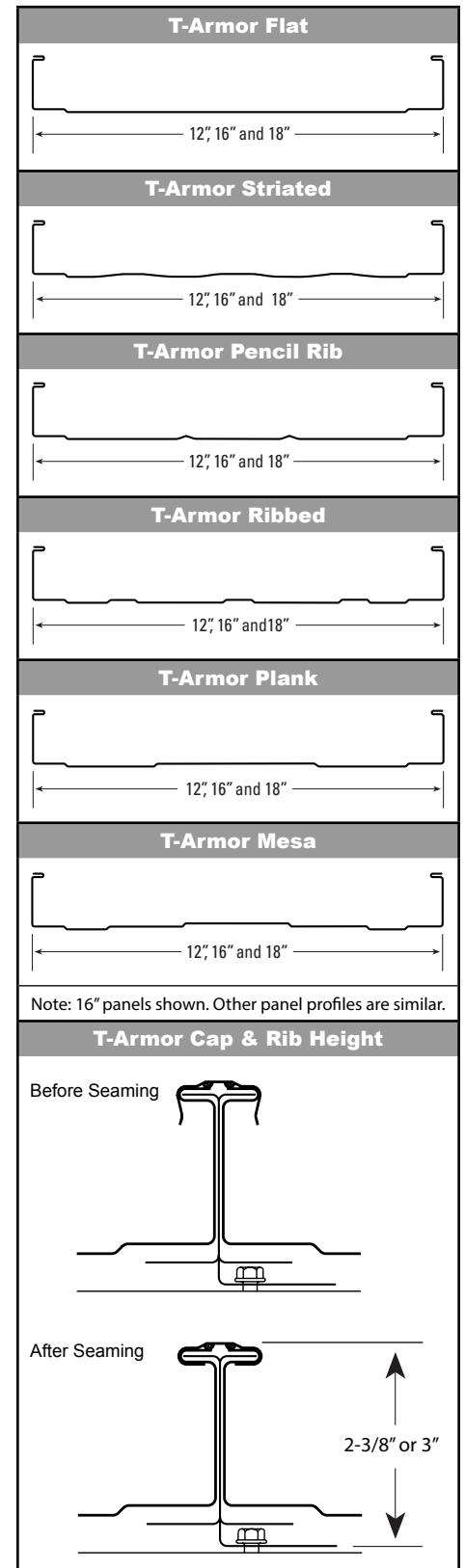
#### Applicable Standards

- 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 Structural 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 331 - Standard Test Method for Water Penetration
- ASTM E 283 - Standard Test Method for Rate of Air Leakage

#### Approvals

Factory Mutual (FM): FM Approval 4471:

- Class 1 Panel Roofs T-Armor Series. Underwriters Laboratories (UL):
- 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.



## 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 for steel is 0.0236 inch (0.60-mm) instead of 24 gauge, 0.0296 inch (0.75-mm) instead of 22 gauge and 0.0356 inch (0.904 mm) instead of 20 gauge. Select AZ50 for painted material or AZ55 for unpainted material. Grade 50 applies to 24 and 22 gauge material. Grade 33 applies to 20 gauge material.

## Technical Properties for T-Armor Series 2-3/8" Products

Complies with requirements of ASTM E 1514 (steel) or ASTM E 1637 (aluminum).

- ▶ Panel Coverage: 12 inches (304.8 mm), 16 inches (406.4 mm) or 18 inches (457.2 mm)
- ▶ Nominal Rib Height: 2-3/8 inches (60.3 mm)
- ▶ Material: Steel sheet, Aluminum-zinc alloy-coated, ASTM A 792, AZ55 or AZ50 coating designation, Grade 50, structural quality, 0.0236 inch (0.58 mm), 0.0296 inch (0.75 mm) or 0.0356 inch (0.904) minimum thickness. Aluminum sheet, ASTM B 209 0.032 inch or 0.040 inch.
- ▶ Minimum Roof Slope Capability: 1/2:12
- ▶ Sealant: Factory-applied side lap sealant in cap
- ▶ 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 (ACG)
- ▶ Color: See list of available colors. Contact Metal Sales for more information.

Aged Copper (65)  
 Antique Patina (M1)  
 Ash Grey (25)  
 Brandywine (P8)  
 Champagne Metallic (168)  
 Classic Green (66)  
 Colonial Red (W75)  
 Copper Penny (W92)  
 Dark Bronze (50)  
 Felt Green (W66)  
 Hemlock Green (M7)  
 Khaki (88)  
 Linen White (81)  
 Mansard Brown (133)  
 Matte Black (106)  
 Medium Bronze (H4)  
 Metallic Silver (K7)

Mistique Plus (W31)  
 Ocean Blue (35)  
 Old Town Grey (W25)  
 Old Zinc Grey (W29)  
 Parchment (W74)  
 Patina Green (W58)  
 Patriot Red (73)  
 Regal Blue (W35)  
 River Teal (59)  
 Sandstone (W51)  
 Slate Grey (W38)  
 Snowdrift White (W81)  
 Tahoe Blue (W71)  
 Taupe (74)  
 Terra Cotta (W72)  
 Weathered Copper (W50)

- ▶ Testing: Fire Resistance Rating: UL 263 and UL 790 Class A Fire Resistance Rating.
- Impact Resistance: UL 2218 Class 4
- Air Leakage: Tested according to ASTM E 1680, ASTM E 283
- Water Penetration: No leakage when tested according to ASTM E 1646, ASTM E 331
- Wind Uplift Resistance: Tested according to ASTM E 1592 and in compliance with UL 580, Class 90 Wind Uplift, Construction #268, #268A, #268B

## Technical Properties for T-Armor Series 3" Products

Complies with requirements of ASTM E 1514 (steel) or ASTM E 1637 (aluminum).

- ▶ Panel Coverage: 12 inches (304.8 mm), 16 inches (406.4 mm) or 18 inches (457.2 mm)
- ▶ Nominal Rib Height: 3 inches (76.2 mm)
- ▶ Material: Steel sheet, Aluminum-zinc alloy-coated, ASTM A 792, AZ55 or AZ50 coating designation, Grade 50, structural quality, 0.0236 inch (0.58 mm), 0.0296 inch (0.75 mm) or 0.0356 inch (0.904) minimum thickness. Aluminum sheet, ASTM B 209 0.032 inch or 0.040 inch.
- ▶ Minimum Roof Slope Capability: 1/2:12
- ▶ Sealant: Factory-applied side lap sealant in cap
- ▶ 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 (ACG)
- ▶ Color: See list of available colors. Contact Metal Sales for more information.

Aged Copper (65)  
 Antique Patina (M1)

Ash Grey (25)  
 Brandywine (P8)  
 Champagne Metallic (168)  
 Classic Green (66)  
 Colonial Red (W75)  
 Copper Penny (W92)  
 Dark Bronze (50)  
 Felt Green (W66)  
 Hemlock Green (M7)  
 Khaki (88)  
 Linen White (81)  
 Mansard Brown (133)  
 Matte Black (106)  
 Medium Bronze (H4)  
 Metallic Silver (K7)  
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 Ocean Blue (35)  
 Old Town Grey (W25)  
 Old Zinc Grey (W29)  
 Parchment (W74)  
 Patina Green (W58)  
 Patriot Red (73)  
 Regal Blue (W35)  
 River Teal (59)  
 Sandstone (W51)  
 Slate Grey (W38)  
 Snowdrift White (W81)  
 Tahoe Blue (W71)  
 Taupe (74)  
 Terra Cotta (W72)  
 Weathered Copper (W50)

- ▶ Testing: Fire Resistance Rating (depends on assembly): UL 263 and UL 790 Class A Fire Resistance Rating.
- Impact Resistance: UL 2218 Class 4
- Wind Uplift Resistance: Tested in accordance with ASTM 1592

## Environmental Considerations

Construction metals generally are readily recyclable at the end of their service life. Some 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).  
 Smoke-Developed Index: 450 or less.  
 Resistance Rating (depends on assembly) - UL 263 Class A (depends on assembly) - UL 790



# SPECIFICATION DATA

## 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.

### Underlayment Installation

Install self-adhering sheet underlayment and felt underlayment as required. Installing slip sheet over underlayment prior to installing metal roof panels may be required. 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 as required.

### Accessory Installation

Install accessories using techniques recommended by manufacturer and which will assure positive an-

chorage 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.

### 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 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 and using the same application equipment. Additionally, fabricated panels, flat 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 Warranties are available in several types. Request sample warranty documents from manufacturer for review and editing assistance. Metal Sales warranty excludes failure due to physical damage and surface deterioration due to exposure to salt air environments. 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.

## 8. MAINTENANCE

No specific maintenance is required for properly installed Metal Sales standing seam panel products. Annual 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.

1. McGraw-Hill Sweets
2. BSD SpecLink
3. Arcom MasterSpec