



# Unpainted Galvalume™ Steel Fact Sheet

## A Superior Building Material

ArcelorMittal Galvalume™ is a coated steel product that has proven its superior performance as a building material in extended field testing in a diverse range of corrosive environments. Its unique combination of durability, edge protection, and resistance to corrosion is at least twice that of galvanized steel.

ArcelorMittal produces Galvalume coated steel sheet in the US and Canada and is the exclusive producer in Canada. The Galvalume coating is an alloy composed of 55% aluminum and approximately 45% zinc by weight. It is applied on both sides of cold-rolled steel sheet using a precise continuous hot dip process. The result is a highly corrosion resistant coated steel that combines the barrier protection and extended durability of aluminum with the galvanic protection of zinc.

Galvalume also offers exceptional heat reflectivity properties, resulting in a lower energy load on buildings and improved interior comfort.

From an aesthetic perspective, the fine spangle and gentle sheen of unpainted Galvalume offers a very attractive appearance.

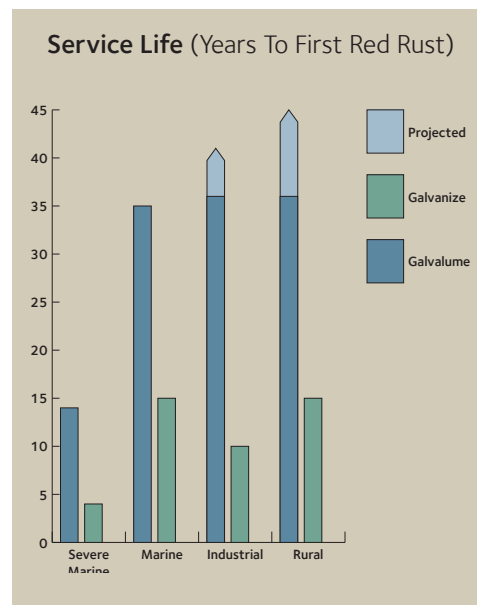
## Product Characteristics

### Proven Superior Corrosion Resistance

Galvalume steel sheet can be expected to provide at least twice the service life of traditional zinc-coatings of similar coating thickness under the same exposure conditions. This has been proven by actual exposure tests using flat coupon samples, conducted over 36 years in the U.S.A. and 15 years in Canada.

The tests covered a variety of environments ranging from rural to severe marine. The following chart, comparing the performance of Galvalume and galvanized

of equal coating thickness, shows that Galvalume has at least twice the service life versus galvanized.



### Superior Cut Edge Protection

The aluminum and zinc in the coating combine to prevent corrosion at exposed edges. The zinc component of the Galvalume coating provides galvanic cut edge protection, while the aluminum component remains as a continuing barrier to corrosion.

### Heat Reflectivity and Solar Reflectance (Energy Efficiency)

Bare, unpainted Galvalume has undergone extensive testing by the Oak Ridge National Laboratory (ORNL), to determine its solar reflective performance. Test results have qualified Galvalume as an approved roof product by the U.S. EPA – ENERGY STAR Program, for both low-slope and high-slope applications.

On newly manufactured Galvalume, heat reflectivity was rated above the minimum U.S. EPA requirement of 0.65. For

weathered roofs over three years of age, the overall solar reflectance also exceeded the minimum U.S. EPA requirement of 0.50 for maintenance reflectivity.

## Enhanced Surface Treatment

ArcelorMittal offers a variety of surface treatments suited to specific manufacturing and application needs.

For unpainted applications, bare Galvalume Plus™ is available. Galvalume Plus has a clear, organic resin coating applied to both sides of Galvalume steel sheet, can be roll-formed without lubricants, and is delivered to the job site with an oil-free surface. See our Fact Sheet on Galvalume Plus for more information.

Unpainted Galvalume can also be passivated with a chemical treatment. With this treatment, Galvalume must be oiled with either vanishing or slushing oil.

If color is specified, Galvalume steel sheet can be ordered as prepainted coil. This option offers an additional layer of paint protection in a wide assortment of attractive colors and paint systems. See our Fact Sheet on Prepainted Galvalume Steel for more information.

## Applications

Galvalume has many proven applications in Commercial, Industrial, Institutional, Agricultural, and Residential Construction.

- Low-slope structural roofing
- High-slope architectural roofing
- Cladding and siding
- Quonset Buildings
- Pre-engineered Steel Buildings
- Building Accessories
- Construction Tubular
- Structural Steel Framing
- Appliance Components
- Automotive Parts

## Points to Remember

### Compatibility with Dissimilar Metals

All materials that can be used in contact with galvanized steel sheet can be used with complete safety in contact with Galvalume. However, as with galvanized, contact of lead or copper with Galvalume steel must be avoided, as it can result in accelerated corrosion.

Galvalume and galvanized can be combined on the same building project, although it is not advisable because galvanized will likely exhibit corrosion before Galvalume. As a design practice, when both materials are in contact, always use Galvalume downstream from unpainted galvanized steel, otherwise accelerated corrosion of the galvanized can occur.

### Handling and Storage

To preserve the surface, handling should only be carried out using clean, dry gloves. Do not slide sheets over rough surfaces or each other.

As with galvanized or painted steel products, bundles of Galvalume steel sheets or products made from Galvalume

steel in all finishes must be kept dry in transit. After transit, material should then be covered and stored off the ground, at a slight angle, to prevent water or condensation from being trapped between adjacent sheet surfaces.

If the bundles become wet, sheets should be separated, wiped with a clean cloth without delay and then placed so that air circulation completes the drying process. These procedures are recommended to avoid possible deterioration of the coating, which could result in non-uniform appearance.

### Joining and Sealing

Recommended fasteners to be used on Galvalume steel sheet should have washers made of Neoprene or a similar material. (See table below). Fasteners containing lead or copper should not be used. Lead headed nails and lead washers should also not be used on Galvalume.

For sealing, neutral cure silicone sealants should be used. Sealants containing acetic

acid or amines should not be used on Galvalume steel. Check with your sealant supplier for brand name recommendations.

## Product Availability

### Sizes Available

Thickness:

0.012" (0.30mm) to 0.090" (2.28mm)

Width: 49.5" (1257mm) maximum

### Qualities

ASTM A792/792M

Commercial Steel

Structural Steel

Special Forming Steel

Helical Steel

### Standard Coating Weights

(Minimum Triple Spot)

AZ30, AZ50, AZ55, AZ60, & AZ 70 (0.30, 0.50, 0.55, 0.60, & 0.70 oz/ft<sup>2</sup> respectively)

AZM100, AZM150, AZM165, AZM180, & AZM210 (100, 150, 165, 180, & 210 g/m<sup>2</sup> respectively)

Galvalume sheet steel can also be ordered as a prepainted coil. Prepainted Galvalume offers an additional layer of paint protection in a wide assortment of attractive colours and paint systems. See our Fact Sheet on Prepainted Galvalume steel for more information.

### Special Customer Note:

The Information in this Fact Sheet is provided for the general guidance of customers and does not imply any warranty. Information provided is based on research conducted by ArcelorMittal and other organizations. Interpretation and/or use of this information is the sole responsibility of the user.

TM – ArcelorMittal (Logo/Slogan) is a trademark of ArcelorMittal.

TM – *Solutions in Steel* is a trademark of ArcelorMittal Dofasco.

TM – Galvalume is a trademark of ArcelorMittal in Canada, and a trademark of BIEC International Inc. in the United States.

## Guidelines for Selection of Fasteners for use with Prepainted Galvalume Steel Sheet

### Rural Atmosphere

1. 300 Series stainless steel or 300 Series capped-stainless steel washer combination
2. Aluminum-zinc alloy cast or capped head used with neoprene-coated aluminum or Type 303 stainless washer
3. Nylon capped head over zinc coated carbon steel shank
4. 1.0 mil zinc coated steel, with additional organic or inorganic coating

### Moderate Industrial Atmosphere

1. 300 Series stainless steel or 300 Series capped-stainless steel washer combination
2. Aluminum-zinc alloy cast or capped head used with neoprene-coated aluminum or Type 303 stainless washer
3. Nylon capped head over zinc coated carbon steel shank
4. 1.6 mil zinc coated steel, with additional organic or inorganic coating

### Heavy Industrial or Marine Atmosphere

1. 300 Series stainless steel or 300 Series capped-stainless steel washer combination
2. Aluminum-zinc alloy cast or capped head used with neoprene-coated aluminum or Type 303 stainless washer
3. Nylon capped head over zinc coated carbon steel shank
4. 1.6 mil zinc coated steel, with additional organic or inorganic coating

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**GALVALUME**  
STEEL

# BERRIDGE FINISHES AND MATERIAL SPECIFICATIONS

All Berridge applied colors are premium fluoropolymer coatings produced with full strength Kynar 500® or Hylar 5000® resin. This coating affords maximum exterior durability due to its outstanding weatherability and resistance to ultraviolet radiation. The factory applied coating is fully warranted for 20 years against cracking, peeling and fading (not to exceed 5 N.B.S. units). These are the highest quality exterior finishes available among competitive products.

## Berridge Metallic Finishes

Metallic colors are processed and finished on Berridge's continuous coil-coating line. These proprietary finishes are available for all factory products, flat sheet and coil. Flat sheets and coils in metallic finishes are available to sheet metal companies for fabrication of special profiles, shapes or flashing. Metallic colors are directional and paint lot sensitive. Large orders should be placed at the same time to avoid mixing paint lots. Berridge Metallic Finishes\* include:

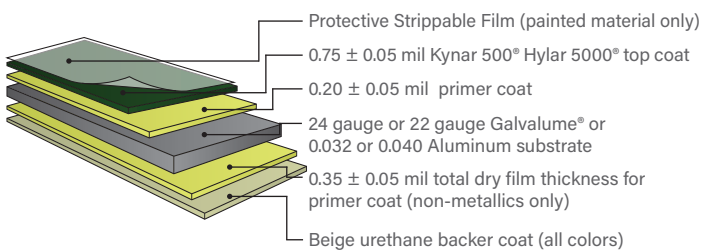
Copper-Cote™	Antique Copper-Cote
Champagne	Zinc-Cote™
Preweathered Galvalume®	Lead-Cote™

\* Metallic and Premium Finishes require a nominal surcharge.

## Acrylic-Coated Galvalume

Acrylic-Coated Galvalume® (ACG) is a coated sheet product that combines the corrosion resistance of Galvalume® steel sheet with a clear acrylic coating that is applied over Galvalume® substrate. The surface treatment is essentially invisible but it provides excellent characteristics to enhance the fabrication, performance and aesthetics of the installed Galvalume. These enhancements include: good roll-formability without the need for oils, excellent transit and field-storage performance without staining, dramatic decrease in finger printing or foot printing during installation and long term surface brightness when exposed to the environment. It is applied at the mill by roll-coating a uniform, thin film of a water-base acrylic solution onto both surfaces of the sheet.

## Coating System



### Notes:

1. Special colors and finishes are available. Please consult Berridge for pricing and delivery.
2. Berridge metallic and premium finishes require a nominal surcharge.
3. Galvalume® is a registered trademark of BIEC International, Inc.
4. Kynar 500® is a registered trademark of Arkema, Inc.
5. Hylar 5000® is a registered trademark of Solvay Solexis.



Berridge owns and operates its own modern continuous coil coating line in San Antonio, Texas, painting both 48" and 42" wide master coils.

## Specifications for all 24 & 22 Gauge\* Galvalume® & 0.032 & 0.040 Aluminum\* Berridge Sheet Metal Products

- A. Prefinished metal shall be Aluminum-Zinc Alloy Coated (AZ-50 Galvalume®) Steel Sheet, 24-Gauge or 22-Gauge\*, ASTM 792, Grade 40, yield strength 40 ksi min. or 3105 Alloy Aluminum Sheet 0.032 or 0.040\*, ASTM B209, H14 temper, yield strength 21 ksi min.
- B. Finish shall be full strength Kynar 500® or Hylar 5000® fluoropolymer coating applied by the manufacturer on a continuous coil coating line, with a top side dry film thickness of  $0.75 \pm 0.05$  mil over  $0.20 \pm 0.05$  mil prime coat, to provide a total top side dry film thickness of  $0.95 \pm 0.10$  mil. Bottom side shall be coated with a primer (non-metallics only) and beige urethane coating with a total dry film thickness of  $0.35 \pm 0.05$  mil. Finish shall conform to all tests for adhesion, flexibility and longevity as specified by the Kynar 500® or Hylar 5000® finish supplier.
- C. Strippable film shall be applied to the top side of all prefinished metal to protect the finish during fabrication, shipping and field handling. This strippable film MUST be removed immediately before installation.
- D. Unpainted metal shall be Aluminum-Zinc Alloy Coated (AZ-55 Acrylic Coated Galvalume®) Steel Sheet, 24-Gauge or 22-Gauge\*, ASTM 792, Grade 40, yield strength 40 ksi min., with clear acrylic coating on both sides of material.
- E. Field protection must be provided by the contractor at the job site so stacked or coiled material is not exposed to weather and moisture.
- F. Flashing may be factory fabricated or field fabricated. Unless otherwise specified, all exposed adjacent flashing shall be of the same material and finish as panel system.

Note: The rolling process of sheet metal results in inherent surface unevenness referred to as "oil-canning". This condition is also caused by several factors including thermal expansion and contraction, dark colors, both medium and high-gloss finishes and uneven substrate. "Oil-canning" in itself is not sufficient cause for material rejection.

\* Not all products and colors are available in 22-Gauge or Aluminum substrate. Consult Berridge for product and color availability.

For complete specifications visit [www.berridge.com](http://www.berridge.com)

### Standard Colors



### Premium Colors

Premium colors require a nominal surcharge.



### Metallic Colors

Metallic colors are premium finishes which require a nominal surcharge.

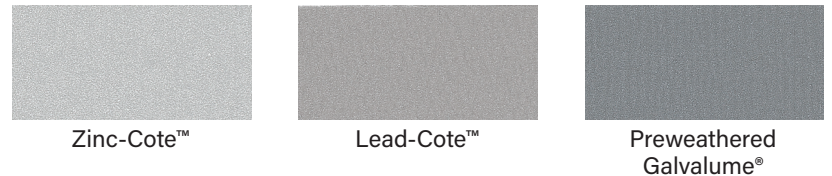


#### Natural Metal Finish

Acrylic-Coated Galvalume® is a coated sheet product that combines the corrosion resistance of Galvalume® steel sheet with a clear, organic resin applied to the top side and bottom side of Galvalume® substrate.

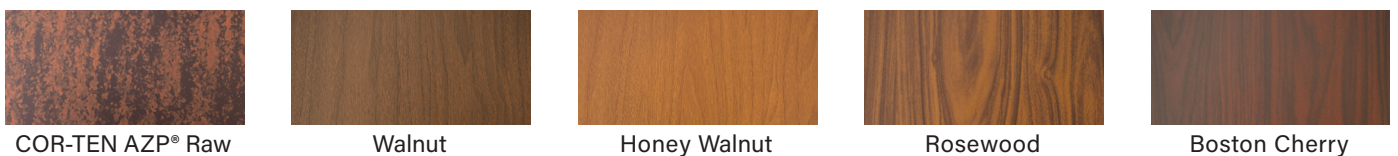


Acrylic-Coated Galvalume®



### Print Pattern Finishes

Consult BMC on print pattern pricing and availability.



# BERRIDGE STOCK AVAILABILITY AND COLOR DETAILS

S - Stock Color N - Non-Stocking Color N/A - Not Available

Standard Colors	24 Gauge		22 Gauge*		0.032 Aluminum*		0.040 Aluminum*		SR	EM	SRI
	48"	42"	48"	42"	48"	42"	48"	42"			
Aged Bronze	S	S	S	N	N	N	N	N	0.31	0.85	31
Almond	S	S	S	N	N	N	N	N	0.65	0.86	77
Bristol Blue	S	S	N	N	N	N	N	N	0.33	0.85	33
Buckskin	S	S	S	N	N	N	N	N	0.43	0.83	46
Burgundy	S	S	N	N	N	N	N	N	0.32	0.84	32
Charcoal Grey	S	S	S	S	N	N	N	N	0.29	0.84	28
Cityscape	S	S	S	S	N	N	N	N	0.48	0.85	54
Colonial Red	S	S	N	N	N	N	N	N	0.35	0.83	35
Copper Brown	S	S	N	N	N	N	N	N	0.32	0.85	32
Dark Bronze	S	S	S	S	N	N	N	N	0.28	0.85	27
Deep Red	S	S	N	N	N	N	N	N	0.41	0.84	44
Evergreen	S	S	N	N	N	N	N	N	0.30	0.83	29
Forest Green	S	S	S	N	N	N	N	N	0.30	0.83	29
Hartford Green	S	S	N	N	N	N	N	N	0.27	0.83	25
Hemlock Green	S	S	N	N	N	N	N	N	0.31	0.84	31
Matte Black	S	S	S	S	N	N	N	N	0.26	0.83	24
Medium Bronze	S	S	S	S	N	N	N	N	0.31	0.85	31
Parchment	S	S	S	N	N	N	N	N	0.60	0.85	71
Patina Green	S	S	N	N	N	N	N	N	0.34	0.85	35
Royal Blue	S	S	N	N	N	N	N	N	0.27	0.85	26
Shasta White	S	S	S	N	N	N	N	N	0.61	0.85	73
Sierra Tan	S	S	S	N	N	N	N	N	0.39	0.85	42
Teal Green	S	S	N	N	N	N	N	N	0.26	0.84	25
Terra - Cotta	S	S	N	N	N	N	N	N	0.36	0.84	38
Zinc Grey	S	S	S	S	N	N	N	N	0.39	0.85	42
Acrylic-Coated Galvalume®	S	S	S	S	N/A	N/A	N/A	N/A	0.67	0.20	59
<b>Premium Colors*</b>											
Award Blue	S	S	N	N	N	N	N	N	0.17	0.83	11
Natural White	S	S	N	N	N	N	N	N	0.71	0.85	86
<b>Metallic Colors*</b>											
Antique Copper-Cote	S	S	N	N	N	N	N	N	0.33	0.84	34
Champagne	S	S	N	N	N	N	N	N	0.40	0.85	43
Copper-Cote™	S	S	N	N	N	N	N	N	0.51	0.85	59
Lead-Cote™	S	S	N	N	N	N	N	N	0.36	0.86	38
Preweathered Galvalume®	S	S	N	N	N	N	N	N	0.40	0.85	43
Zinc-Cote™	S	S	N	N	N	N	N	N	0.53	0.83	59
<b>Print Pattern Finishes**</b>											
COR-TEN AZP® Raw	S	N	N	N	N/A	N/A	N/A	N/A	0.32	0.89	34
Walnut	S	N	N	N	N/A	N/A	N/A	N/A	-	-	-
Honey Walnut	S	N	N	N	N/A	N/A	N/A	N/A	-	-	-
Rosewood	S	N	N	N	N/A	N/A	N/A	N/A	-	-	-
Boston Cherry	S	N	N	N	N/A	N/A	N/A	N/A	-	-	-

## Testing results for Kynar 500® or Hylar 5000® PVDF Resin-Based Color Finishes coil coating applications:

- Specular Gloss: (ASTM D-523) Low and medium gloss only
- Color Uniformity: (ASTM D-2244) Color controlled both instrumentally and visually
- Dry Film Thickness: (ASTM D-7091, ASTM D-1005, NCCA 11-13, 11-14, 11-15) Primer 0.20 ± 0.05 mil, topcoat 0.75 ± 0.05 mil
- Hardness: (ASTM D-3363, NCCA 11-12, Eagle Turquoise Pencils) HB Minimum
- Adhesion (X-Cut): (ASTM D-3359) No adhesion loss
- Adhesion (Crosshatch): (ASTM D-3359) No adhesion loss
- Abrasion Coefficient: (ASTM D-968) 100 liters/mil topcoat
- Direct Impact Flexibility: (ASTM D-2794, Gardner Impact Tester, 1/10" Distortion) Excellent, no removal
- Reverse Impact Flexibility: (NCCA Spec. 11, ASTM D-2794, Gardner Impact Tester, 5/8" ball Impact force in inch pounds equal to metal thickness) Excellent, no cracking or loss of adhesion
- Formability: (ASTM D-4145, 180° T-Bend on 1/8 Mandrel) No cracks or loss of adhesion
- Erosion: (20 years, 45° South Florida) Maximum 15% loss
- Humidity Resistance: (ASTM D-2247) Passes 2000 hours on Galvalume® and 4000 hours on Aluminum
- Acid Resistance: (ASTM D-1308, Proc. 3.1.1, 10% Sulfuric Acid spot test, 24 hour exposure) Excellent, no effect
- Salt Spray Resistance: (ASTM B-117) Passes 2000 hours on Galvalume® and 4000 hours on Aluminum
- Alkali Resistance: (ASTM D-1308, Proc. 5.2, 10% Sodium Hydroxide, 24 hour exposure) Excellent, no effect
- Detergent Resistance: (ASTM D-2248, 72 hours immersion in 3% solution at 100°F) Excellent, no effect
- Resistance to Acid Pollutants: (ASTM D 1308 Proc. 3.1.1, 24 hour exposure 10% HNO<sup>3</sup> vapors) Excellent, no effect
- Weathering - Color Retention: (ASTM D-2244, 20 years, 45° South Florida) Maximum 5 NBS units color change
- Weathering - Chalk Resistance: (ASTM D-4214, 20 years, 45° South Florida) Not worse than No. 8 rating

### Notes:

1. ASTM - American Society for Testing Materials
2. NCCA - National Coil Coating Association
3. Galvalume® is 55% Aluminum-Zinc alloy coated sheet steel and is a registered trademark of BIEC International Inc.
4. Kynar 500® is a registered trademark belonging to Arkema, Inc.
5. Hylar 5000® is a registered trademark belonging to Solvay Solexis, Inc.

S Stock Color; Not subject to a minimum order  
 N Non-Stock Color; Subject to inventory on hand; 4500 sf minimum order for 22 Gauge and 0.032 & 0.040 Aluminum  
 N/A Not Available  
 \* Consult BMC on product availability. Premium and Metallic finishes are subject to a nominal surcharge, contact BMC for additional information.  
 \*\* Consult Berridge on pricing and availability for Print Pattern Finishes.

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\*\*\* Berridge California and Florida Sales Corporations are separate entities from Berridge Manufacturing Company.



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