ArcelorMittal

Unpainted Galvalume™ Steel Fact Sheet

A Superior Building Material

ArcelorMittal GalvalumeTM 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.

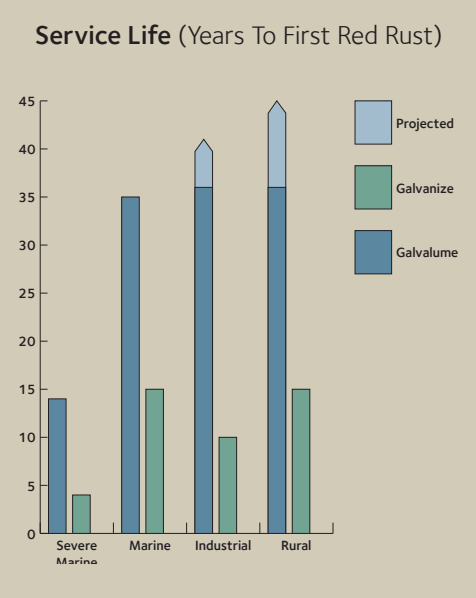
From an aesthetic perspective, the fine spangle and gentle sheen of unpainted Galvalume offers a very attractive appearance.

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.

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

Rural Atmosphere	Moderate Industrial Atmostphere	Heavy Industrial or Marine Atmosphere
1. 300 Series stainless steel or 300 Series capped-stainless steel washer combination	1. 300 Series stainless steel or 300 Series capped-stainless steel washer combination	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	2. Aluminum-zinc alloy cast or capped head used with neoprene-coated aluminum or Type 303 stainless washer	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	3. Nylon capped head over zinc coated carbon steel shank	3. Nylon capped head over zinc coated carbon steel shank
4. 1.0 mil zinc coated steel, with additional organic or inorganic coating	4. 1.6 mil zinc coated steel, with additional organic or inorganic coating	4. 1.6 mil zinc coated steel, with additional organic or inorganic coating

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^2 respectively)

AZM100, AZM150, AZM165, AZM180, & AZM210 (100, 150, 165, 180, & 210 g/m^2 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.

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GALVALUME™ STEEL

KYNAR 500® OR HYLAR 5000™ COLORS & NATURAL METAL FINISHES

All Berridge-applied colors are premium fluoropolymer coatings produced with full strength Kynar 500® or Hylar 5000™ resin. Kynar 500® or Hylar 5000™ affords maximum exterior durability due to its outstanding resistance to ultraviolet radiation. Full-strength Kynar 500® or Hylar 5000™ color finishes carry a 20-year warranty against cracking, peeling and fading (not to exceed 5 N.B.S. units). These are the highest quality exterior finishes available!

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. Berridge Metallic Finishes include:

COPPER-COTE™
ANTIQUE COPPER-COTE
CHAMPAGNE
ZINC-COTE™
LEAD-COTE™
PREWEATHERED GALVALUME®

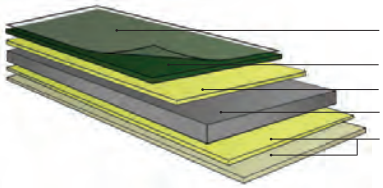
** Metallic Finishes are premium colors which require a nominal surcharge.*

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 performance and applicability of GALVALUME® steel sheet. These enhancements include: good rollformability 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.

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

COATING SYSTEM



Notes:
1. Special colors and finishes are available. Please consult Berridge for pricing and delivery.
2. Berridge metallic finishes are premium finishes and 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.

SPECIFICATIONS FOR ALL 24-GAUGE & 22-GAUGE* BERRIDGE PRODUCTS IN GALVALUME®

SHEET METAL MATERIAL

A. Prefinished metal shall be Aluminum-Zinc Alloy Coated (AZ-50 Galvalume®) Steel Sheet, 24-Gauge or 22-Gauge*, ASTM 792-08, Grade 40, yield strength 40 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 ± 0.05 mil over 0.20 ± 0.05 mil prime coat, to provide a total top side dry film thickness of 0.95 ± 0.10 mil. Bottom side shall be coated with a primer and beige urethane coating with a total dry film thickness of 0.35 ± 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 792-08, 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 maybe 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.**

For complete specifications visit www.berridge.com

BERRIDGE MANUFACTURING COMPANY
KYNAR 500® HYLAR 5000™ COLOR FINISHES

(800) 669-0009
www.berridge.com

STANDARD COLORS

Due to limitations in the printing process, please request actual color chips for accurate color viewing.

BUCKSKIN | PARCHMENT | ALMOND

AGED BRONZE | SHASTA WHITE | FOREST GREEN | PATINA GREEN | SIERRA TAN

MEDIUM BRONZE | CHARCOAL GREY | HEMLOCK GREEN | BRISTOL BLUE | TERRA-COTTA

DARK BRONZE | ZINC GREY | HARTFORD GREEN | ROYAL BLUE | COLONIAL RED

COPPER BROWN | MATTE BLACK | TEAL GREEN | BURGUNDY | DEEP RED

PREMIUM COLORS

Berridge premium colors require a nominal surcharge.

NATURAL WHITE | AWARD BLUE

METALLIC COLORS

Berridge metallic colors are premium finishes which require a nominal surcharge.
Due to limitations in the printing process, please request actual color chips for accurate color viewing.

CHAMPAGNE | COPPER-COTE™ | ANTIQUE COPPER-COTE

NATURAL METAL FINISH

Berridge 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®

ZINC-COTE™ | LEAD-COTE™ | PREWEATHERED GALVALUME®

ENERGY STAR PARTNER

All colors except Award Blue comply with LEED® v3 & Energy Star requirements for roof slopes greater than 2:12.
Almond complies with LEED® v3 requirements for low slopes.
Natural White complies with LEED® v3 & Energy Star requirements for low slopes.

KYNAR 500® HYLAR 5000™ SPECIFICATIONS FOR GALVANIZED AND GALVALUME® COIL COATING APPLICATIONS:

TESTED PROPERTY	TESTING METHOD	KYNAR 500® or HYLAR 5000™
Colors Available	---	See color chart on reverse side
Specular Gloss	ASTM D-523-80	Low and medium gloss only
Color Uniformity	ASTM D-2244-79	Color controlled both instrumentally and visually
Dry Film Thickness	ASTM D-1400-81, ASTM D-1005-84, NCCA 11-13, 11-14, 11-15	Primer 0.25 ± 0.05 mil, Topcoat 0.8 ± 0.05 mil
Hardness	ASTM D-3363-89, NCCA 11-12, Eagle Turquoise Pencils	H.B. Minimum
Adhesion (X-Cut)	ASTM D-3359-90	No adhesion loss
Adhesion (Crosshatch)	ASTM D-3359-90	No adhesion loss
Direct Impact Flexibility	ASTM D-2794-84, Gardner Impact Tester, 1/10" Distortion	Excellent, no removal
Reverse Impact Flexibility	NCCA Spec. 11, ASTM D-2794-84, 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, 180º T-Bend on 1/8 Mandrel	No cracks or loss of adhesion
Salt Spray Resistance	ASTM B-117-73 (1992)	Passes 1000 hrs on H.D.G. Steel 1000 hrs on Galvalume®
Humidity Resistance	ASTM D-2247 (1987)	Passes 2000 hrs on H.D.G. Steel 2000 hrs on Galvalume®
Acid Resistance	ASTM D-1308-79 (1987), Proc. 3.1.1 10% Sulfuric Acid spot test, 24 hr exposure	Excellent, no effect
Alkali Resistance	ASTM D-1308-79 (1981), Proc. 5.2 10% Sodium Hydroxide	Excellent, no effect
Abrasion Coefficient	ASTM D-968-81	100 liters/mil topcoat
Detergent Resistance	ASTM D-2248, 72 hrs immersion in 3% solution at 100ºF	Excellent, no effect
Resistance to Acid Pollutants	ASTM D 1308-87 Proc. 3.1.1 24 hr exposure 10% HNO^3 vapors	Excellent, no effect
Weathering - Color Retention	ASTM D-2244-89, 20 yrs, 45º South Florida	Maximum 5 NBS units color change
Weathering - Chalk Resistance	ASTM D-659-86, 20 yrs, 45º South Florida	Rating of 8 minimum
Erosion	20 yrs, 45º South Florida	Maximum 15% loss

Notes:
1. ASTM - American Society for Testing Materials
2. NCCA - National Coil Coaters Association
3. Galvalume® is Aluminum-Zinc alloy coated sheet steel and is a registered trademark of BIEC International, Inc.

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BERRIDGE MANUFACTURING COMPANY
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Roofs of Distinction

*Roofs of Distinction

*Berridge California Sales Corporation is a separate entity from Berridge Manufacturing Company

March 2011 Berridge Color Chart - 30M Printed in the U.S.A.