

55% Aluminum-Zinc Alloy Coated Steel

55% aluminum-zinc alloy coated steel is cold-rolled carbon steel with a continuous hot dip process metallic coating composed of: 55% aluminum, 43.4% zinc, and 1.6% silicon. The alloy coating is applied to both sides of the steel sheet. The generic product reference is 55% aluminum-zinc alloy coated steel, although there are trademarked names for the same product such as Galvalume[®] and Zincolume[®]. DECRA Metal Roofing uses sheet steel hot dip coated with 55% aluminum-zinc alloy to fabricate its exceptionally long-life roof panels and accessory components.

55% aluminum-zinc alloy coated steel out-performs galvanized steel (coated with 100% zinc) at a rate of 2 to 4 times the life span of traditional galvanized steel. The protective aspects for 55% aluminum-zinc alloy coated steel are such that the zinc in the alloy coating initially protects the steel, including cut or drill edges, but will gradually corrode away over time – with the zinc protective effect diminishing first. Once the zinc coating is sacrificed due to corrosion, the aluminum component of the metallic alloy coating persists to insure barrier corrosion resistance remains in effect for a substantially longer period of time, along with aluminum’s ideal heat reflective properties to reduce solar heat gain.

Silicon enhances the alloy coating adhesion, keeping it in place when the steel is rolled, stamped or bent, while the aluminum additive and zinc fusion create microscopic particle areas within the coating – the aluminum-rich areas, which corrode very slowly, provide long-term durability, while the zinc-rich areas, which corrode preferentially provide galvanic protection.

Aluminum-Zinc Alloy Coating Benefits

Durability: Aluminum-zinc alloy coating forms a permanently bonded, tough, sacrificial coating that protects the steel from corrosion in end-use applications, like a DECRA Roof System installed on a home or building. Additionally, the alloy offers the corrosion resistance and heat reflectivity of aluminum coatings, along with the formability and galvanic protection of cut edges of zinc coatings.

Severe Conditions: 55% aluminum-zinc alloy coated steel has superior long-term corrosion resistance in most atmospheric conditions. This is achieved by combining the sacrificial protection of the zinc with the barrier protection provided by the aluminum.

Sustainability: 55% aluminum-zinc alloy coated steel is 100% recyclable, as it can be melted back down for reuse at the end of life – resulting in less construction product going in landfills. Additionally, its long service life means that the product will last longer without the need for replacement.

ASTM Specifications

Physical properties test designation ASTM A792 details the general requirements for hot-dipped 55% aluminum-zinc alloy coated steel. This specification includes steel chemistry requirements, typical mechanical properties of various metallurgical grades, and the coating weight requirements for the different coating designations.

Alloy Coating Thickness

The alloy coating thickness is measured as the coating weight, in ounces per square foot. For example, a coating designation of AZ50 specifies that there is a minimum coating weight of 0.50 ounces per square foot on both sides of the steel sheet. AZ50 coating thickness provides the protective coating thickness required by DECRA roofing products to ensure long life protection against corrosion.

Resin Coating

A resin coating is applied on DECRA's aluminum-zinc alloy hot-dip steel coil used to produce DECRA Metal Roofing roof panels and accessory components. The acrylic water-based resin coating is applied to both sides of the steel sheet. DECRA uses a brown-tint resin coating that is formulated to resist finger printing and scuffing during product handling, as well as eliminating the need for steel roll forming lubricants to be used in the coil production process. Additionally, resin coating presents a better adhesion surface for the acrylic mastic that DECRA applies to its stone-coated products to adhere stone granules to the base steel sheet.

Roof Sealant Use

For sealing DECRA Roof System components, neutral cure silicone roof-grade sealants should be used. Sealants containing acetic acid or amines should not be used on aluminum-zinc alloy steel.

Summary

In a nutshell, 55% aluminum-zinc alloy coated steel provides the ideal base material to manufacture DECRA Metal Roofing panels and accessory components. This is a proven metal roofing base material because of its strength, outdoor corrosion resistance and longevity. Combine this performance with the coating's exceptional heat reflectivity that results in lower energy load on buildings and improved interior comfort.

The combination of zinc and aluminum enhances the positive attributes of both metals: barrier corrosion resistance and heat resistance similar to aluminized material and good bare edge galvanic protection and forming qualities like zinc galvanized material. Consequently, 55% aluminum-zinc alloy on steel will resist rust, the elements and fire while providing a sturdy and protective covering.

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