Galvanized and Galvalume Steel for Substrate

By far and away Galvanized and Galvalume are the two most popular substrates in the metal roofing and siding industry. While both are used, each has their own merits for their use in the industry.

What exactly is Galvanized and Galvalume?

Galvanized Steel:

Galvanized substrate is measured and designated by the amount of zinc that is applied to the base steel. The thicker the amount of zinc coating translates to the greater amount of protection against panel corrosion. The two most popular coating thicknesses for Galvanized Steel are designated as G-60 and G-90. The number in the designation relates to the total amount of zinc contained on both sides of the steel panel surface. A G-60 substrate surface contains 0.6 ounces of zinc for every one square foot of steel panel surface, while a G-90 substrate surface would contain 0.9 ounces of zinc. Hot dipped galvanized (HDG) is the industry name for this type of steel coating as the zinc is applied using a continuous hot dip coating process. Galvanized steel combines the formability and corrosion protection of zinc with the cost effectiveness of steel and can be used in virtually any application. Galvanized steel with its zinc coating has proven to be an outstanding and superior coating for over one hundred years. Typically, G-90 is used for Bare Galvanized panel, while G-60 is used for Painted Galvanized panel.

Galvalume Steel:

Galvalume is the trade name for a patented steel product, which has a corrosion resistance that consists of aluminum, zinc alloy and silicon. Like Galvanized Steel, the thicker the amount of coating, the greater the amount of corrosion protection for the Galvalume steel panel. Galvalume is also produced using the hot dip method for applying the coating to the base steel. The two most popular coating thicknesses for Galvalume Steel are designated as AZ-50 and AZ-55. The number in the designation relates to the thickness of the coating on both sides of the steel panel surface. An AZ-55 coating has a thickness of 0.0018, while an AZ-50 would have 0.0016 coating. Both AZ-55 and AZ-50 coatings contains 55% aluminum, 43.40 % zinc alloy and 1.60% silicon. The primary purpose for the silicon to be added is to minimize the growth of brittle intermetallic layer that forms when the product is being coated. Furthermore, without the addition of silicon Galvalume Steel could not be produced by the hot dip method. Galvalume Steel has similar forming qualities as Galvanized Steel however; there are applications for which Galvalume cannot be used. Typically, AZ-55 is used for Bare Galvalume panel, while AZ-50 is used for Painted Galvalume panel.

What does this mean in terms of a Panel?

The Density, Weight and Cold Rolled Carbon Steel Content of the Substrates

It is widely known that Galvalume Steel weighs less than Galvanized Steel. This is due to the density of Galvanized being equal to that of the cold rolled carbon base steel, which is .2833, while the density of Galvalume coating falls in at .1356.

An AZ-50 Galvalume coating is 0.0016 thickness, and when combined with the cold rolled carbon steel at thickness of 0.0134 the desired 0.015 thickness for panel substrate is achieved. A G-60 Galvanized coating is 0 .0010, and when it is combined with the cold rolled carbon steel at a thickness of 0.014 it too reaches the optimum 0.015 thickness. There is approximately 4.48% more actual steel in a Galvanized G-60 panel compared to a Galvalume AZ-50 coated panel.

A Galvanized G-60 substrate for 38" Panel would weigh 2.08 lbs. per lineal foot.
A Galvalume AZ-50 substrate for 38" Panel would weigh 1.97 lbs. per lineal foot.

The bottom line is, because it weighs less and has less zinc and actual carbon steel, Galvalume substrate is less expensive.