

FIGURE 6.42 Transition of insulated roof panels to high wall. (Centria.)

protection, in addition to a sacrificial action of zinc. Galvalume sheets are available in commercial, lock-forming, and structural grades, and each grade can have one of three coating weights—AZ50, AZ55, and AZ60. A popular AZ55 coating weighs 0.55 oz/ft² and is equivalent to a nominal thickness of 0.9–1.0 mil (0.0009–0.001 in) on each side.²⁶ It is normally used for unpainted structural roofing.²⁵

Galfan, made of 95 percent zinc and 5 percent aluminum, is specified in ASTM A 875. Galvalume-coated steel looks like a cross between galvanized and aluminized steels, while Galfan

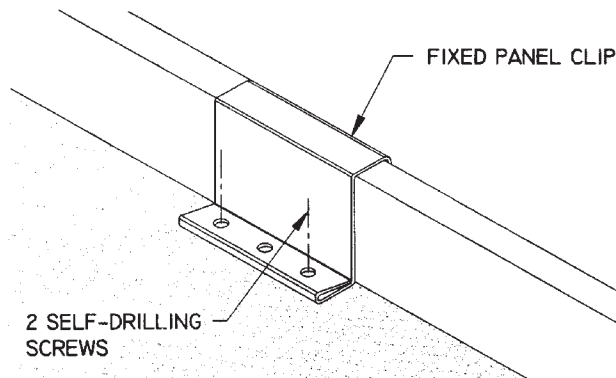


FIGURE 6.43 Fixed clips used for short architectural panels. (*Butler Manufacturing Co.*)

finish is difficult to distinguish from pure galvanizing. Zinc and aluminum are typically bonded to steel in a continuous hot-dip coating process.

Aluminum-zinc coatings should offer excellent metal protection for decades. A recent survey of 82 Galvalume-coated metal roofs in the eastern United States by the Galvalume Sheet Producers of North America found the roofs to be in excellent condition.²⁶ The organization projects that these roofs can easily last 30 years in most regions before needing major maintenance; it estimates that Galvalume coating should last two to four times longer than G90 galvanizing in marine, industrial, and rural environments.

The superior performance of Galvalume and other zinc-aluminum coatings is partly explained by the fact that these coatings are less reactive and therefore retain their barrier protection longer than pure galvanizing.²⁷ As a result, zinc-aluminum coated roofing has displaced galvanized roofing and has become industry standard. Galvalume-coated roofing typically carries a 20-year manufacturer's warranty.

Galfan-coated steel is especially suitable for applications involving field bending and forming of panels, since it is virtually unaffected by cracking or flaking common in bent hot-dip galvanized members.

Panels with Galvalume have been traditionally coated with lubricating oil prior to roll forming to avoid damaging the coating.¹⁴ This so-called vanishing oil was supposed to largely evaporate by the time the panels were delivered to the job site. In reality, much of the oil remained, and installers had to erect and walk on slippery, difficult-to-handle roofing sheets.

This disadvantage has been largely overcome with introduction of clear-coated Galvalume panels. The major manufacturers of zinc-aluminum sheets have developed many proprietary formulations of Galvalume coated with acrylic or other clear resins. According to Fitro,²⁷ some of the brand names sold in North America, and their trademark holders, are Galvalume Plus (BIEC International Inc. and Dofasco Inc.), Acrylume (USX Corp.), Galvaplus (Galvak, S.A. de C.V.), Zinalume (Steelscape), and Zintro-Alum Plus (Industrias Monterrey S.A.).

The clear coating not only obviates the need for vanishing oil, but also minimizes staining and scuffing during storage and installation of the panels. The clear-coated Galvalume is rapidly gaining ground on the original oil-lubricated variety. For unpainted roofing applications, the clear resin coating is designed to dissipate naturally within 12–18 months without powdering or peeling.²⁸

It is worth keeping in mind that, regardless of how great the coating might be, most roofing corrosion occurs at the field-cut edges. Despite the fact that to some degree zinc can extend its healing properties to cut edges, it is still best to have all roofing factory-trimmed and finished. The use of factory-supplied touch-up compound improves the roof's resistance to corrosion in the areas of cuts and handling damage.