

Pure Soft Zinc for Roof Flashings and Accessories

A Look at Zinc & How it Stacks Up

by Greg Morrow, president, FlashCo Manufacturing, Inc.

Many of you are familiar with the applications of zinc in the roofing industry. Most commonly zinc is used to coat steel in the galvanizing process creating an anti-corrosive, weather-protective coating. Pure zinc panels, 99.7% zinc, are used in roofing systems for standing seam, flat seam, batten seam, and mansards. Pure zinc is also being used for fascia panels, edge metals, copings, gutter, and downspouts. Zinc panels are considered hard zinc and are alloyed most notably with titanium and copper.

The purpose of this article is to address the attributes of pure soft zinc and how it meets and exceeds the standards for roof flashings and accessories. Soft zinc is an even more pure form of zinc and is over 99.995% pure, resistant to corrosion, and malleable making it easy to form. Removing most of the copper and titanium makes the metal significantly softer hence easier to form. The Rockwell hardness of hard zinc ranges from 50 – 68 and soft zinc ranges from 22 – 35. Further, we will examine zinc by comparison to other common soft metals used in roofing applications.

Corrosion

Soft zinc meets the requirement of a corrosion-resistant metal for roof flashings and accessories within the system per Chapter 15 of the International Building Code (IBC), flashing for penetrations and other areas of the roof, "...wherever there is a change in roof slope." This section of the IBC is somewhat unclear regarding the thickness of the non-galvanized corrosion resistant material. Galvanized (zinc coated) steel is the only material specifically called out at .019" or 26 ga., but the specification implies other non-corrosive metals are acceptable and in fact are used every

day in roofing applications. Roofing industry practice for lead is 2 1/2# per square foot (.042"). For tile roofing systems the lead requirement is specific in the IBC and calls for 3# lead (.051"). Lead is highly resistant to corrosion and like copper will out last any roofing system, both metals boasting a service life of 100 plus years. 16-oz soft copper (.022") is also used in several of these details where *in-field* forming is not required. Tempered Aluminum is referred to as dead soft aluminum and is widely used in the southern regions of the country in tile roofing applications where the rate of corrosion can be higher and low job costs are a major concern. Aluminum is the only metal susceptible to pitting corrosion and has the lowest expected service of the metals lasting around 30 plus years. Aluminum meets the requirement of a corrosion resistant metal and the common thickness is .025". Zinc's expected service life is over 60 years in even the harshest climates such as urban/industrial and ocean side. All metals are susceptible to accelerated corrosion when in contact with things like acid from oak tree leaves and the limestone in uncured mortar.

Formability

Malleable, easy to form and shape, metal flashing is required in several specifications throughout the industry. Because it is extremely easy to work with, lead has been the long time favorite of contractors for more challenging details including plumbing vent-pipe flashings, exhaust flashings, attic-vent flashings (ie. penetrations), and other accessories. In the case of vent-pipe flashings, the common pipe jack for plumbing vent pipe, many contractors prefer to protect the entire penetration and bend soft metal back into the vent. Soft zinc is an excellent alternative for lead as soft zinc can be turned down into the vent pipe. For tile systems a malleable metal, such as lead, has been the standard because it forms to the contours of the tile. Soft zinc easily conforms to the contour of tile and just like lead you can

solder zinc. Dead soft aluminum, which is a tempered 3003 alloy, is the only metal that needs to be pre-treated (tempered) for roofing applications. Tempering metal is a heating process adding strength to the metal. Even after treatment aluminum is the least malleable metal and most likely to tear. Dead soft aluminum is more difficult to form and typically has to be glued down to prevent wind blow up.

Soft zinc is relatively new to the United States and has been used in Europe for over 200 years for roof flashings and accessories. Although used in the United States for decades as a roof system, its use is expanding in part, due to lifetime cost savings. I spoke with a contractor who said, "... Now it is all they use, it took a couple of weeks for my guys to get used to but it is going great now and my customers love it." He further told me the workers really enjoy working with zinc for the simple fact it is so much easier to handle up and down the ladder and on the roof. Zinc is an easier sell to home owners because it is an environmentally-friendly metal that is sustainable.

Zinc and lead are sustainable and environmentally friendly from the standpoint of recycling and the cost of production. Lead is considered toxic especially for children. The main route of poisoning is ingestion as lead is not readily absorbed through the skin. Zinc, copper, and aluminum are not considered toxic and generally safe to handle.

When choosing a metal that is right for your job there are several things to consider such as the base cost of the material, transportation expense, inventory holding expense, on-the-job handling, installation time, and how long it will last.

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