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Zinc Runoff from Painted TruZinc® and Painted ZINCALUME® Roofs

ZINCALUME (Galvalume®) sheet features an alloy coating on the steel that is approximately 55% aluminum and 45% zinc. TruZinc (galvanized) sheet features an alloy coating on the steel that is approximately 100% zinc. These coatings have been well documented to provide outstanding corrosion resistance.

When these sheet steels are pre-painted by Steelscape, the paint systems applied serve as an additional barrier to the sheet steel. These paint coatings have also been well documented in providing outstanding corrosion and weathering resistance, serving to protect the sheet steel from external elements such as rain.

Steelscape is committed to protecting the environment and to providing accurate information and product support to our customers. As an active member of several steel industry trade associations, we are supporting the on-going investigations to identify those factors which influence the amount of zinc present in the rainwater runoff from a steel roof. We believe that these factors include but may not be limited to:

1. How much acid is present in the rainfall;
2. The intensity of the rainfall (i.e. how many inches per hour it is raining);
3. The duration of the rainfall (i.e. how long does the rainfall last);
4. The total area of the roof;
5. The temperature of the roof surface.

Predicting the absolute concentration of zinc present in roof runoff for any rainfall situation is nearly impossible, due to the combination of factors above.

However, Steelscape did perform some simulated rainfall testing at our site in Kalama, Washington, in 2001. Our testing utilized the rainwater test protocol outlined by the Land Use Services Division of Washington State King County's Department of Development and Environmental Services. The following levels of metals were detected from our tests on pre-painted TruZinc steel roofing:

Element	Level Detected (µg/L or ppb)
Arsenic	Not Detectable
Cadmium	Not Detectable
Copper	Not Detectable
Lead	Not Detectable
Mercury	Not Detectable
Nickel	Not Detectable
Zinc	11

Please note that the tests were performed on our painted galvanized (brand name TruZinc) steel but the results are also valid for our painted ZINCALUME steel products.



We do believe that the amount of acid present in the rainfall is the most important factor. The pH of the rainfall is a measure of how much acid is present. The lower the pH is, the more acidic the rainfall is. Water that has no acid present would have a pH of 7.0. Normal rainfall would have a pH of about 5.4 to 5.6. The reason that normal rainfall has a pH lower than 7.0 is that carbon dioxide is absorbed into the rainfall from the atmosphere. The carbon dioxide produces carbonic acid, a very weak acid. At pH levels from 5.6 down to about 5.0, extremely small quantities of zinc would be present in the rainwater runoff most likely as a result of the increased carbon dioxide present in the atmosphere of select regions/areas.

In relation to steel roofing products and zinc run-off, the outstanding long-term performance of current paint systems utilized in manufacturing pre-painted steel roofs would show that these systems adhere and perform extremely well in external environments. We have inspected both bare and pre-painted steel roofs 20-25 years old that are located in acid rain areas. The inspection results showed the roofs to be in excellent condition and have many years of life ahead of them. This simply would not be the case if the zinc were corroding or dissolving significantly. We nonetheless are supporting studies underway to better understand and characterize the factors that would affect the rainwater runoff from steel roofs.

These steel industry associations are investigating methods to remove even trace amounts of zinc from the rainwater runoff. Wetlands are an excellent method for removing zinc. Wetlands change the zinc from a form that is easily dissolved in water to one that is not at all soluble in water, even acidic water. The small quantities of zinc that may be present in the runoff from steel roofs are then locked up in the soil and not available for uptake by plants or animals. Other tests are being conducted to determine if non-wetland soil conditions, e.g., topsoil covered with lawn or meadow growth, will also remove zinc from rainwater runoff.

If you have any questions, please contact your Steelscape sales representative, or Steelscape directly at (888) 553-5521 or at productinfo@steelscape.com.

Sincerely,

A handwritten signature in black ink that reads "Michelle Vondran".

Michelle Vondran
Manager, Product Innovation & Technology
Steelscape, LLC

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ZINCALUME® is a registered trademark of BlueScope Steel
Galvalume® is a registered trademark of BIEC International, Inc.