



## *Ducted Systems Technical Services Service Tips Letter*

Letter: **ST-004-2021**

Date: February 17, 2021

To: Ducted Systems (Factory Direct) S1 HVAC Branch Service, Sales, Warranty Managers  
Ducted Systems (UPG/Applied) Distribution Service, Sales, Warranty Managers  
BSNA Sales and Service Managers

Subject: **Zinc Oxides on HVAC Equipment – “Wet Storage Stain (WSS)”**

Product: **Ducted Systems Commercial Rooftop Units**

Effective: **February 17, 2021** Expires: **NA**

Summary: **This letter outlines the cause of zinc oxides on zinc coated unpainted metal often found on rooftop equipment.**

Zinc oxides deposit on HVAC equipment and can create a white film or dust that is sometimes a concern for customers. This is a superficial coating that forms on the surface of zinc coated metal when exposed to the atmosphere. Moisture is the primary cause of the oxidation. In areas where water has an opportunity to sit stagnate, there will be higher levels of oxidation.

This film is referred to as “wet storage stain” and is the visible formation of zinc oxide and zinc hydroxide on the surface of galvanized steel. Zinc changes when exposed to the atmosphere and as it gets wet and then dries a protective layer of zinc corrosion known as zinc patina, builds on the material’s surface. This patina is primarily comprised of zinc carbonate and is part of the normal weathering process. The zinc patina does not wash off in rain or snow and actually slows the corrosion rate of the material.

Small to medium levels of wet storage stain (WSS) are superficial and do not impact the service life of the steel or zinc coating. The material should be left to weather while the protective layer of zinc patina develops. In cases where there is a cosmetic concern, the material can be coated with field applied treatments designed for sheet steel or fencing, following the treatment manufacturer’s instructions. These can include waxes or oils, or powder coating in extreme cases.

Below is an example of a normal occurrence –



Minimizing moisture build up can help in minimizing WSS, but in most cases, it can't be avoided. WSS will not impact the service life of HVAC equipment nor will it impact the warranty of the product.

Russ Carfagno  
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Reference: *Wet storage stain: A guide to minimizing and treating wet storage stain on hot-dip galvanized steel.* (2014). American Galvanizers Association.

[https://galvanizeit.org/uploads/publications/Wet\\_Storage\\_Stain\\_On\\_Galvanized\\_Steel.pdf](https://galvanizeit.org/uploads/publications/Wet_Storage_Stain_On_Galvanized_Steel.pdf)