



MANAGING WET STORAGE STAIN

Science, Solutions, and Customer Care

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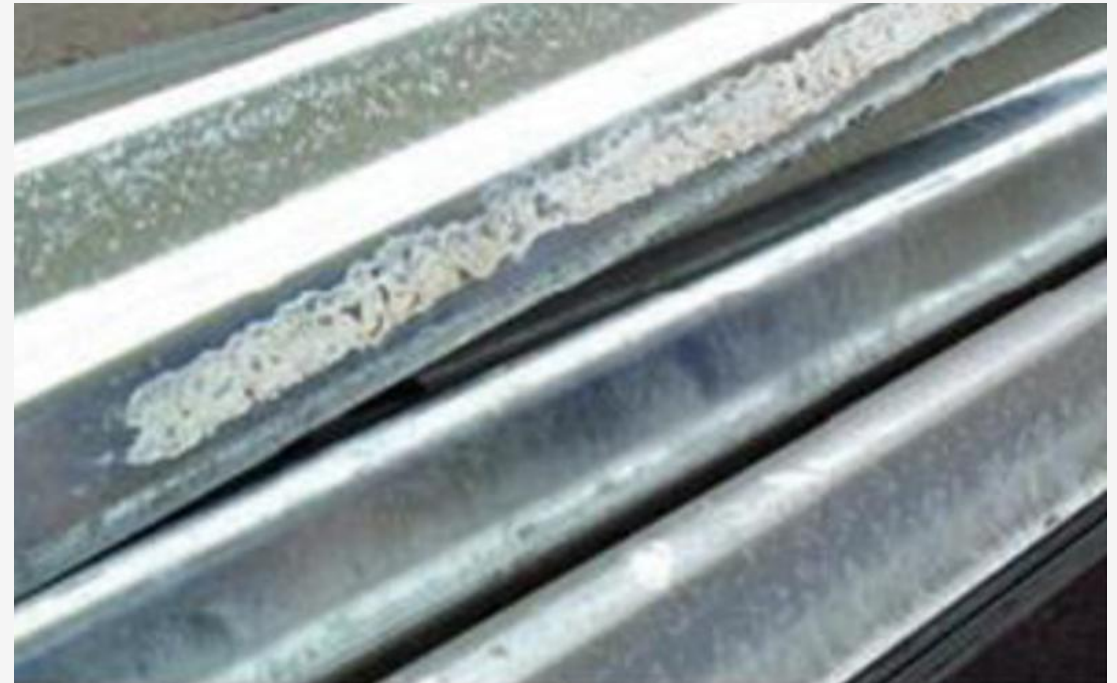
VISIBLE PHENOMENON

Defining Wet Storage Stain

Zinc reaction. An accumulation of zinc oxide and zinc hydroxide.

Fresh coatings. Occurs on highly reactive, newly galvanized steel surfaces.

Visual cue. Appears as a distinct white, powdery deposit.



ROOT CAUSES & CONDITIONS

Environmental and Storage Triggers

Environmental triggers. Trapped atmospheric condensation, direct exposed rainwater pooling, and sustained high relative humidity.

Storage liabilities. Tight structural nesting, flat and un-sloped stacking habits, and a critical lack of free-flowing ventilation.



COATING IMPACT EVALUATION

Cosmetic Flaw vs. Structural Integrity

Typically harmless. Most occurrences are purely aesthetic and do not compromise long-term service life.

Natural dulling. Stains blend as the natural dark gray patina matures over time.

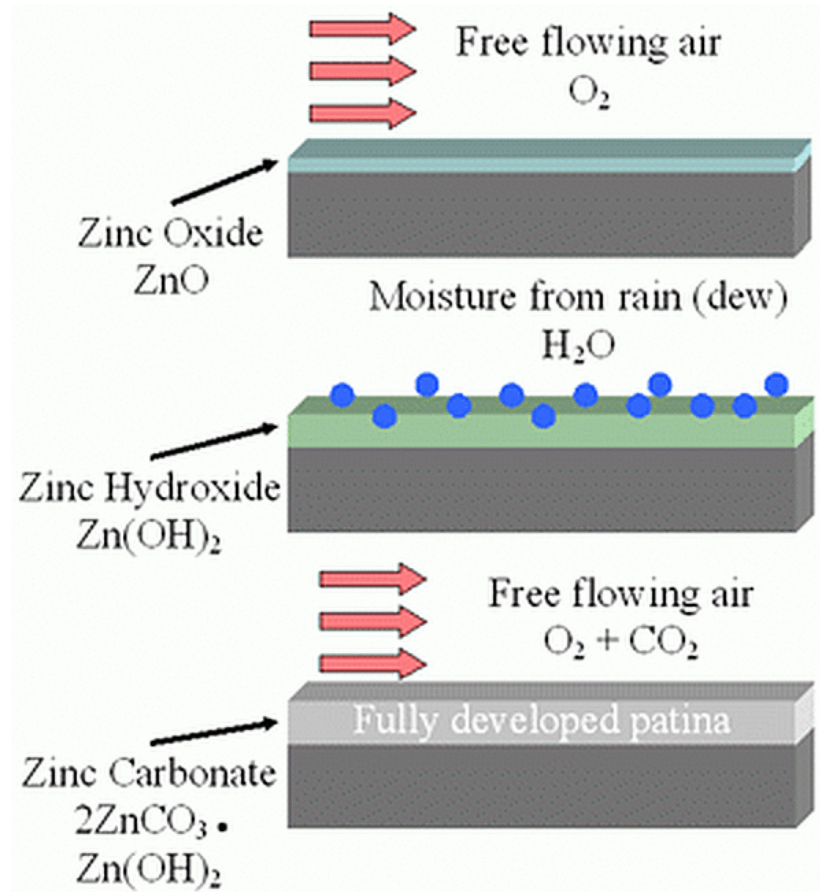
Severe scenarios. Deep dark or black staining indicates significant zinc layer erosion.

Thickness verification. Use a magnetic coating thickness gauge to verify actual defense layers.



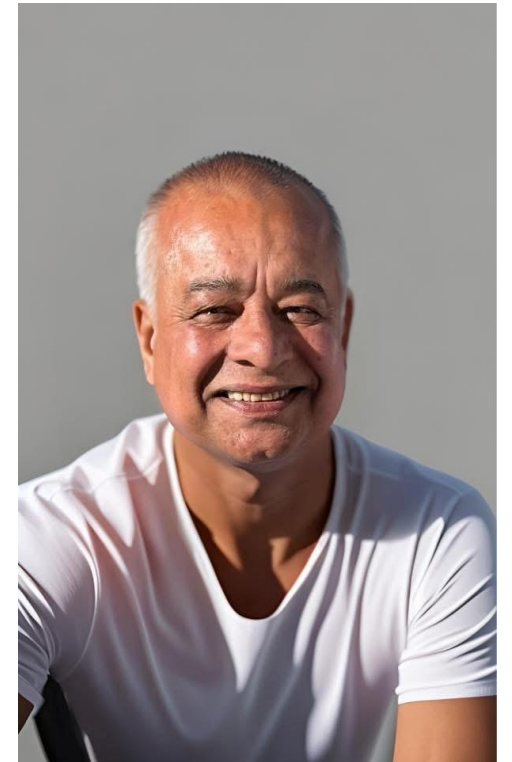
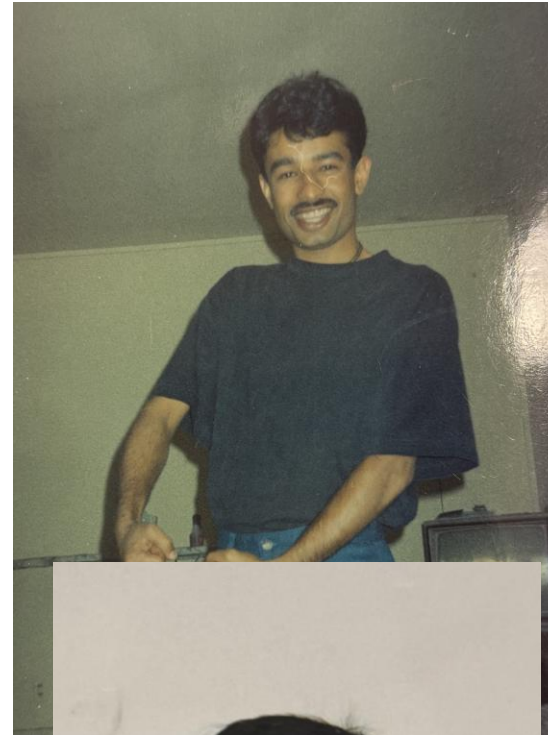
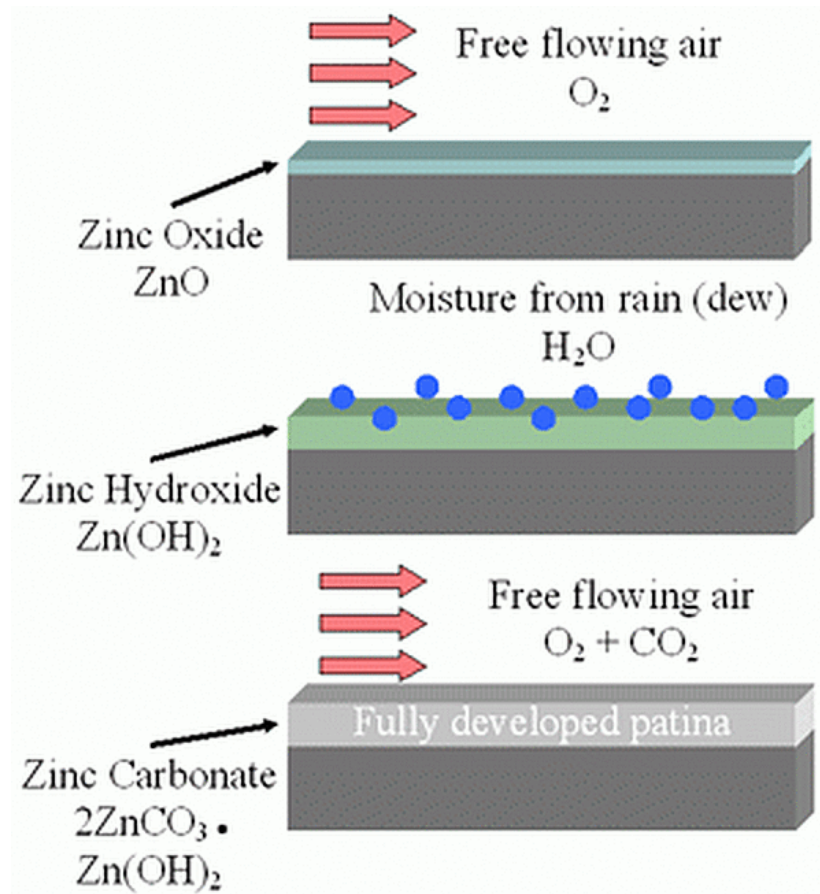
Give it time!!

Most wet storage stain will weather through the oxides



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FIELD PREVENTION

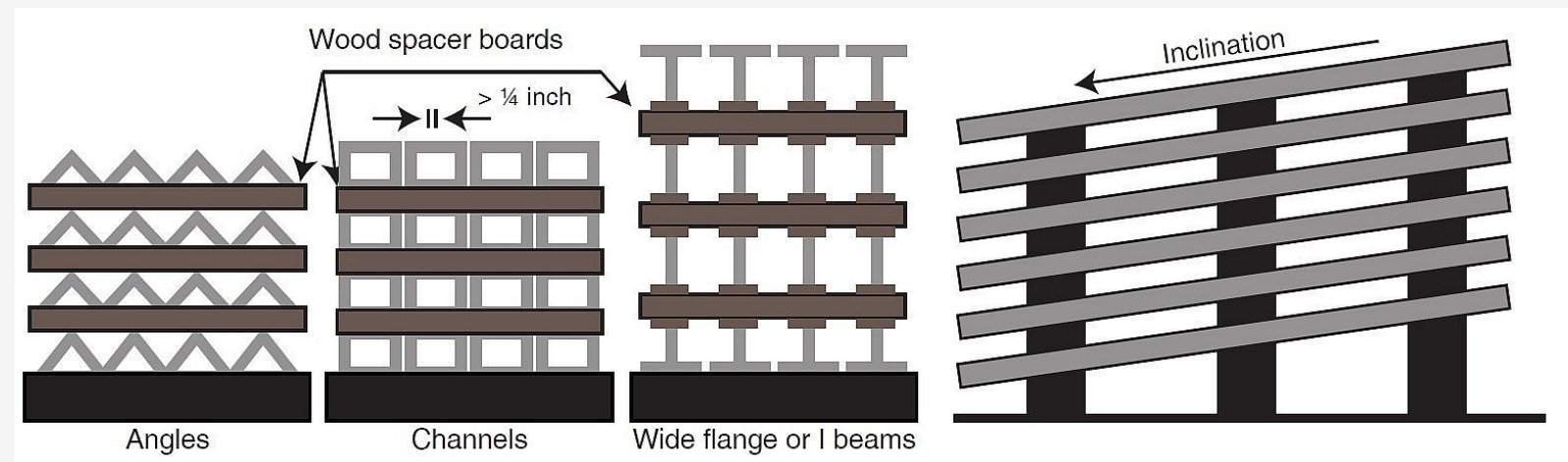
Proactive Storage and Handling Control

Elevate steel. Store materials off wet ground using non-staining dunnage or wooden blocks.

Insert spacers. Use strips, chains, or polymers to separate tightly nested components.

Incline storage. Angle products so water runs off naturally.

Chemical protection. Inquire about post-galvanizing passivation baths for temporary safety.



RESTORATION PROTOCOLS

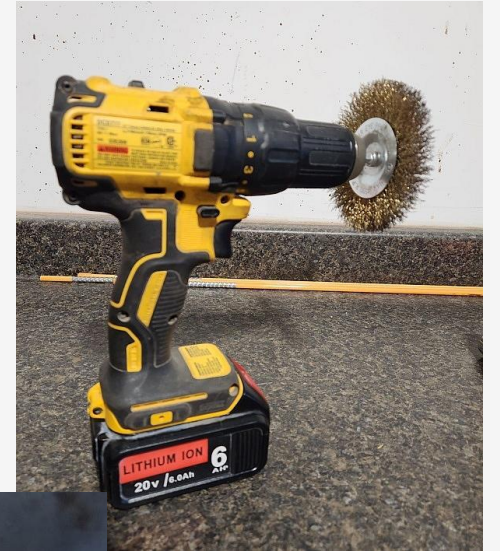
Step-by-Step Remediation

Light cleaning. Brush lightly using a stiff nylon bristle brush.

Medium treatments. Scrub with a mild citric acid or ammonia cleaner to neutralize deposits.

Severe corrections. Wire-brush down to clean steel and apply a zinc-rich repair paint coating.

Safety warning. Avoid harsh carbon steel wire brushes that can gouge out intact zinc layers.



Customer Complaint and Response

There is an issue – What now??

Request pictures. Evaluate the condition of the material.

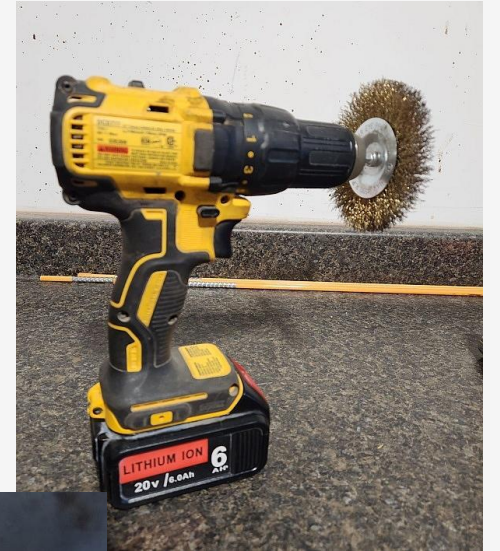
Email AGA materials. Send the customer the relevant information from the AGA knowledge base.

AGA Inspection APP. Text / email to customer

Visit customer site. Bring simple tools and supplies.

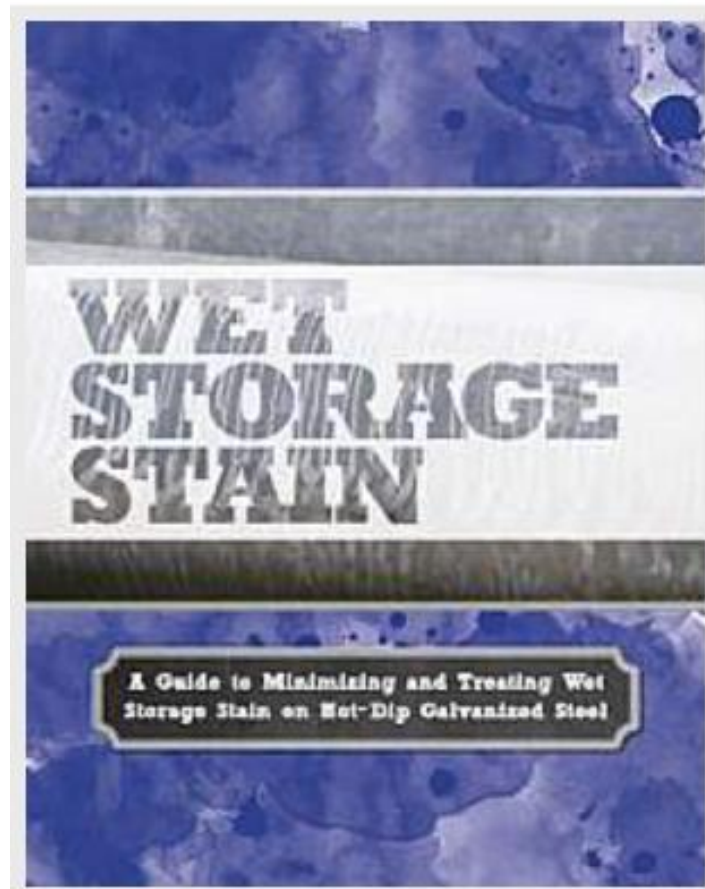
Sandpaper / file / brush / touch up paint

Zinc Meter. You want to show that the material has the thickness required before and after sanding or other repairs!!



AGA Resources

Let the customer hear it from the association



WET STORAGE STAIN A Pictorial Explanation



The two guardrail sections depicted above were hot-dip galvanized on the same day.

- The dull-gray section of guardrail on the left side of the picture was taken from the interior of a stack of hot-dip galvanized guardrail that was exposed to moisture (humidity or rain) but not exposed to freely-flowing air. As a result, these sections of guardrail formed a zinc corrosion product film (wet storage stain) over a period of one week.

- The shiny section of guardrail on the right side of the above picture was galvanized and stored under cover while exposed to freely-flowing air.

Both sections were attached to the posts of the concrete barrier on the same day (December 18, 2002).

The photo below depicts the same guardrail sections 3½ months after they were first attached to the concrete barrier.

- The left section of the guardrail — which was already dull-gray in appearance due to the rapid formation of wet storage stain from damp, unventilated storage conditions — now matches the right piece of guardrail that was originally bright and shiny.

- When hot-dip galvanized steel with light-to-moderate wet storage stain is ultimately exposed to freely-flowing air, the zinc corrosion products react with carbon dioxide to form the matte gray zinc carbonate film that we recognize as the stable patina that gives hot-dip galvanized steel its incredible resistance to corrosion.

- The section on the right progressed in a normal fashion to the zinc carbonate stage, and the corrosion protection provided by each section is identical.

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Questions??

**Remember....Give it time
to go through it!!**

