

Paint, Coatings & Acid Exposure (Glycolic, Muriatic, Phosphoric)

This section deals with **paint and coatings only**, separate from bare-metal flash rust.

How Acids Affect Paint in General

Paint and clear coats are there to protect metal, but they're still **chemical films**. Aggressive acids can:

- Knock down or strip gloss
- Stain, haze, or whiten the surface
- Soften or undercut the coating, especially around chips, edges, and thin spots

The big variables are:

1. **Acid type & concentration**
2. **Contact time** (especially if the acid is allowed to **dry** on the surface)

Glycolic-Based Cleaners on Paint

At typical cleaning strengths (around 10% glycolic in solution):

- Generally **more coating-friendly** than strong mineral acids.
- On sound OEM paint with **short contact and prompt rinse**:
 - Usually well tolerated.
- Misuse (over-dwell or drying on the panel) can:
 - **Dull gloss**
 - Leave **spots or light etching**, especially if repeated over time.

Muriatic (Hydrochloric) Acid on Paint

At typical cleaning strengths (around 19% HCl):

- Much more **aggressive to paint and clear coats** than glycolic or phosphoric.
- Even brief, uncontrolled contact can:
 - Flatten gloss
 - Cause whitening or haze
- Longer dwell or drying can:
 - **Soften clear coat**
 - **Undercut paint** at chips and edges
 - Lead to peeling, flaking, or permanent coating failure

For this reason, strong HCl-based products are **not recommended around good OEM finishes**, except under very controlled conditions with immediate, thorough rinsing.

Phosphoric Acid on Paint

At the concentrations commonly used in metal prep and rust converters:

- **More gentle on paint** than muriatic, but usually **harsher than glycolic** in terms of residue and staining risk.
- On sound coatings with controlled use:
 - Often used in “**prep and etch**” scenarios on marginal or old paint, or on spot-rusted areas.
- Risks if misused:
 - Can **dull or micro-etch** gloss surfaces when left on too long.
 - May leave **dark staining** or a slightly chalky film if it dries on paint.
- Best used:
 - On problem areas where you’re already planning to **spot repair, scuff, or topcoat**, not as a routine cab soap.

Wear, Chipping & Coating Failure From the Inside Out

Even with careful chemical choices:

- **Inside the drum**, years of mixing, abrasion, and chipping **stress and deform the steel shell**.
- This creates **dimples and flex points** that telegraph to the **outside**.
- Paint over those high-stress spots is repeatedly flexed and chipped until it cracks.
- Once that coating breaks, you have **isolated bare spots** that begin to rust—often showing up as random rust freckles on an otherwise decent-looking drum.

In many cases, those outside rust spots are primarily **mechanical wear + environment**, not an acid product failure.

Best Practices to Protect Paint & Coatings

- **Keep strong acid off good paint when you can.**
- If overspray happens:
 - **Rinse immediately** – don’t “let it work” on the cab.
- Never allow **any acid** (glycolic, phosphoric, or muriatic) to **dry on painted surfaces**.
- After acid use on the vehicle:
 - Run a **neutral/soapy cab wash with wax** to:
 - Remove remaining residues
 - Bring pH closer to neutral
 - Restore gloss
 - Lay down a thin hydrophobic film that helps **repel water and road film** and **visually mask minor etching**