

## Acid Wash

### Identification and Removal Options



Supporting New Zealand's Repair Certification Industry

### Important Notes

1. The purpose of this Technical Bulletin is to provide guidance and assistance to Repair Certifiers in the following three areas:
  - a. to understand the 'rust treatment' process that has been applied to used imported vehicles prior to entry into New Zealand - commonly referred to as Acid Wash; and
  - b. the reasons why this Acid Wash treatment requires Repair Certifier assessment; and
  - c. to describe treatment method options – as an alternative to sandblasting – for removing existing Acid Wash materials (prior to the development of an appropriate corrosion treatment and protection programme).
2. It is recognised that there are logistical challenges and inefficiencies associated with the treatment methods described in this Technical Bulletin, in particular because of the shortage of premises with an outside hoist, and the drying time required between steps. However, the treatment methods described in this Technical Bulletin can, in many cases, be a better option than sandblasting, and should be considered.
3. Additional information on corrosion (including preparations, treatments etc.) will become available over time, via a series of Technical Bulletins currently under development by RepairCert NZ.



### Background

Border Inspectors and Entry Certifiers have continued to observe an increasing number of used imported vehicles that have had acid-based substances sprayed indiscriminately over the underbody (including suspension and mechanical components).

The 'Acid Wash' term is used to describe a process where acids (of unknown concentrations), have been applied haphazardly to the underbody of the vehicle prior to export, with the false expectation that this is a 'quick fix' for any visible rust (*as shown in Image 1*).



**Image 1:** example of Acid Wash unnecessarily applied to a non-rusted surface.

Border Inspectors and Entry Certifiers have been unsure whether to refer affected vehicles to a Repair Certifier, as in many instances, corrosion (rust) may not be immediately apparent at the time of the inspection.

**For this reason, and to provide clarification, a Position Statement on Acid Wash has been developed by RepairCert NZ for all Border Inspectors and Entry Certifiers to read and understand, so that they are both confident and consistent in referring affected vehicles to a Repair Certifier for assessment.**

With the expectation that Acid Wash-affected vehicles will consistently be referred to Repair Certifiers for assessment, this Technical Bulletin has been created to assist Repair Certifiers in developing appropriate rectification procedures that will, by necessity, require additional preparation steps prior to the application of legitimate corrosion treatment and protection schedules.

## Classification of Acid Wash

Corrosion treatments that are substantially acid-based are described as being neutralisers/removers. These mineral or organic acid solutions react directly with iron oxide (rust). Their effectiveness will vary according to the:

- acid type (citric/hydrochloric/sulphuric/phosphoric etc.); and
- concentration; and
- severity of the rust present; and
- processes used prior, during, and after application.

Phosphoric acid is the most common acid used for neutralising/removing rust on steel, and is the predominant acid used for 'Acid Washing'.

In comparison to other mineral acids, phosphoric acid is relatively weak and less reactive to most surfaces, all the same, there is the opportunity for the acid solution to continue reacting with metals and other coatings (especially in instances where the acid wash solution may include other more aggressive acids, such as hydrochloric and sulphuric acids).

## The Proper Processes

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For corrosion (rust) to be neutralised/removed correctly:

- all loose, scaly rust must be mechanically removed (cleaned back to bare metal as much as possible) prior to application of neutraliser/remover; and
- at the time of application, the acid treatment needs to be ‘worked’ into the rusted or oxidised surfaces, by a brush or abrasive pad etc.; and
- it must not be allowed to dry during that time; and
- importantly, requires thorough rinsing and drying, prior to the application of corrosion inhibitors/topcoats.

## Closer Inspection of Acid Washing, as Commonly Used on Imported Vehicles

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- Once we understand the correct processes for corrosion treatments and protection, it becomes immediately apparent when we look at the following examples (shown in the images and descriptions below), that the Acid Wash practice is entirely ineffective, and in many instances, may be detrimental to the vehicle structure in the long term.



**Image 2:** loose/flaking rust scale has not been removed and is still present.



**Image 3:** very little iron oxide (rust) is neutralised/removed when acids are indiscriminately applied and not properly worked into the surface.



**Images 4:** the dry phosphorous coating created by the acid reaction to the metal (the white, powdery coating seen on the surface), is detrimental to the adhesion of subsequent topcoats.



**Image 5:** acids not neutralised/removed (especially in difficult to access areas e.g. the inside of box sections and welded seams), can continue to attack any exposed metal surfaces, breaking down or degrading other protective coatings that they come in direct contact with, and allowing further corrosion to develop.

## Rectification Procedure Options (Other than Sandblasting)

In Acid Wash situations, the dried phosphoric coating **MUST** be neutralised/removed **prior** to the application of correct rust treatment programmes. This can be achieved by either:

1. soda-blasting; or
2. water-blasting, possibly followed by the application of one of the following options:
  - an alkali solution such as caustic soda or ammonia, in water; or
  - a 2:1 solution of muriatic (hydrochloric acid) and water; or
  - detergent diluted in water e.g., multi-purpose cleaners, dishwash and laundry liquids (preferably with high suds levels to break down the acid residue more efficiently).

If water-blasting is chosen, followed by the application of one of the cleaning agents referred to above, a second water blast or thorough rinse is needed to completely remove any chosen cleaning agent, followed by thorough drying.

## Corrosion Treatment and Protection

The correct corrosion treatment and prevention processes can then begin, and should be an appropriate combination of:

- **surface preparations** (*rust scale removal*) by mechanical means (*sanding and grinding etc.*) and/or media blasting; and
- **rust treatments** (removers/neutralisers and converters); and
- **appropriate protective coatings** (epoxy primers, sealers and underseals); and
- **corrosion prevention systems** (cavity waxes and penetrating oils/fluids).





## In Summary

If the correct procedures are followed, any Acid Wash-affected vehicle can be repaired successfully, have the correct corrosion treatments applied, and the proper protection processes restored.



FOR FURTHER INFORMATION PLEASE CONTACT REPAIRCERT NZ.