

Metal Cleaning Methods



Aircraft Part following Alkaline Cleaning prior to rinse

Overview & Applicability

Alkaline Cleaning

Alkaline cleaning is used to breakdown oils and greases from a part's surface. It is most commonly used as a pre-etch process. It is also occasionally used as a pre-FPI (Fluorescent Penetrant Inspection) step. In both cases, its success is evidenced by the lack of "water breaks" during a post cleaning rinse on the part's surface.

Aluminum Etch Cleaning

Aluminum etch can be used for both cleaning and inspection. For cleaning, it is typically used as a pre-FPI step. Sodium hydroxide (NaOH) is used for etching aluminum parts.

Anodic Cleaning

Anodic cleaning is one of many methods available to clean surface films from selective metals. Anodic cleaning occurs by placing a subject part in an alkaline bath, and then applying a current to the part. It is applicable to stainless steels and nickel based materials.

Macro Etch Cleaning

Macro etch can be used for both cleaning and inspection. It is applicable to nickel and titanium based alloys. Macro etch cleaning is typically used as a pre-FPI step to remove smeared material that would otherwise adversely affect FPI.

Passivation

Passivation is a cleaning and protective layer process that is applicable only to stainless steels. It is commonly used to hydrate stainless steel blades to remove contaminants off their surface. The resulting highly cleaned surface is then exposed to air to form an oxide protective layer.

"Pickling"

Pickling is a form of acid cleaning. It is specifically used on titanium to remove Alpha, a thin layer created during cold working. Pickling is also used as an overall cleaning decontamination after shot peening. Another common use is to clean tubing prior to welding and/or prior to use in transporting sensitive fluids.

Vapor Degreaser

Vapor degreaser is another cleaning method, and is typically used as a pre-FPI step. It is accomplished by heating up the part while exposed to a tri-chlorethylene cleaning solution. As a result, the highly cleaned surface allows penetrant to more easily flow into discontinuities.

Summary

Material	Aluminum	Carbon Steel	Stainless Steel	Nickel	Titanium
Cleaning Type					
Alkaline		X	X	X	X
Aluminum Etch	X				
Anodic			X	X	
Macro Etch				X	X
Passivation			X		
Pickling					X
Vapor Degreaser	X	X	X	X	X



Part on Fixture Submerged Acid Cleaning Solution

Metals Testing Company
80 Kimberly Drive, PO Box 69
South Windsor, CT 06074
(USA)



Metals Testing Company

TEL: (860) 289-8225

FAX: (860) 289-5970

e-mail: mtc62@aol.com

website: www.mtc62.com

© Copyright 2002 DELISLE INC.