Introduction to Corrosion Control and Coatings

Surface Preparation

Topics

- Pre-cleaning
- Hand and power tool cleaning
- Chemical stripping
- Waterjetting
- Abrasive Blasting (including Plastic media)
- Surface treatment
Surface Preparation

- **Goals of surface preparation**
  - Remove contaminants
    - Oils, greases, soluble salts
  - Remove imperfections
    - Sharp edges and burrs
  - Remove corrosion products
  - Remove old coatings
  - Obtain a specified surface roughness

Washing

- Necessary in order to remove dirt, oil, grease and salts
- Exterior washing steps:
  1. Spray on hot water and approved cleaning agent
  2. Scrub the surface
  3. Rinse
  4. Dry
- Avoid using pressure washers
  - Will force water into faying surfaces and seals
Removing Soluble Salts

- Salts on surface can cause osmotic blistering of coating
- Removed by freshwater wash

Pre-cleaning

- Cleaning may include solvents and detergents
- Oils and greases
  - Clean to prevent them from being embedded in a surface
  - Prevent contamination of tools and blast media
Masking

- Masking is required prior to surface cleaning, chemical treatment, and coating
  - Windows
  - Windshield frame
  - Vents
  - Static ports
  - Rubber seals
  - Tires
  - Applicable flight controls

Coating Removal

- Coating removal can be achieved by:
  - Hand or power tools
  - Chemical stripping
  - Waterjetting
  - Abrasive blasting
Hand Tool Cleaning

- Used to remove corrosion products, loose paint, and for feathering the edge
- Acceptable hand tools:
  - Abrasive mats
  - Papers
  - Cloths
  - Brushes

Power Tool Cleaning

- Faster and more efficient than hand tool cleaning
- Examples of power tools
  - Flap brushes
  - Orbital sanders
  - Needle guns
  - Grinders
### Chemical Stripping

- Popular method for aircraft coating removal
- Completed at an approved facility
- After chemical stripping is complete, wash with hot water to remove residual chemicals

![Image of chemical stripping](image)

### Waterjetting

- Used as an alternative method to remove hard materials
- Minimizes hazardous waste generation
- Can damage joints and sealants in assemblies
- Can introduce water into unwanted areas
- Does not produce a surface profile
Aerospace Engineer Surface Preparation

Abrasive Blasting

- Does NOT remove oil, grease, or chemical contaminants
  - Removed during pre-cleaning
- Removes rust, paint, and other tough, brittle contaminants
- Fast and cost-effective process
- Can create a roughened surface suitable for good coating adhesion
- Variety of media can be used depending on application (e.g. garnet, plastic beads, sponge)

Surface Preparation Summary

- Chief functions of surface preparation:
  - Remove surface contaminants that prevent good adhesion and/or prevent premature deterioration of coating and substrate.
  - To texture the surface to provide additional area for bonding of the primer.
- Contaminants:
  - Dirt
  - Oil
  - Grease
  - Salts
  - Corrosion products
  - Hydraulic Fluids
  - Deteriorated coating
Agenda

- Corrosion Basics
- Fundamentals of Corrosion Control
- Surface Preparation for Coatings
- **Coatings and Coating Types**
- Coating Application and Safety
- Coating Defects and Inspection