

**Knowledge Domain: Mechanical**  
**Unit: Cleaning**  
**Skill: Rust**

**Tools and Parts Required:**

- 1) wire brush
- 2) sand paper (rough and fine)
- 3) steel wool
- 4) rusty object
- 5) safety goggles
- 6) work gloves

**Introduction**

Rust forms on iron and steel when they are exposed to water. Rust can prevent a machine from working properly. Rust can stop doors from closing and wheels from turning. Rust can be harmful to human health.

Rust can be removed if stopped early. If rust is not stopped and removed early, a rusted device may have to be discarded.

**Example**

Below is a picture of a shovel before and after cleaning.



**Identification and Diagnosis**

Rust is brown and red. Rust appears on the outside of metal. Rust is flaky. Rust forms when metal is exposed to water.

Rust can cause moving parts to stop moving. Rust can cause nuts to stick on bolts. Rust is larger than the original metal. Rust can cause doors to stop closing or opening.

To confirm diagnosis of rust and to determine that cleaning can help, scrape metal with a screwdriver. Where rust is present, you will see bare (bright) metal. Look for pits and holes. Replace or discard weak metal.

### **Procedure**

Wear safety goggles and gloves when cleaning. Remove rust by scraping, brushing, sanding or chemical removal.

For large flakes, remove the rust with a scraper or large, flat-head screwdriver. For large surface areas, use a wire brush. After scraping or brushing, use sandpaper or steel wool to remove small flakes or a rough surface. Rub the surface with rough sand paper until the bare (bright) metal begins to appear. Continue to rub the surface with fine sand paper until the bare (bright) metal is completely visible.

For very fine rust or areas that are difficult to reach, there are chemical removal techniques. These are expensive and involve strong chemicals usually available only in very large cities. Chemical removal is not recommended in hospitals and clinics.

### **Exercise**

Your instructor will give you a rusty object. It may be a bolt or a flat panel. The object can be obtained from any junk car. Or, the object can be a piece of medical equipment from your hospital.

Scrape, brush and sand the object until the rust is removed. Your instructor must verify your work before you continue.

### **Preventative Maintenance and Calibration**

To prevent rust, keep metal parts dry. If a device is wet, dry it. If the staff leaves the device in water, move the device or elevate the device on plastic. Parts that are not exposed to patients or staff can be covered with oil or grease to prevent rust.

Always calibrate every medical device before returning it to use.