

## TROUBLESHOOTING

### Corrosion

**Problem:** Debris and residue in box locks, serrations and ratchets.  
**Solution:** Serrations, box locks and ratchets should be carefully cleaned and rinsed. A soft bristle brush is effective in these difficult areas.

**Problem:** Moisture remaining on the instruments within the sterile wrapped packs; excessive moisture in autoclave during sterilization and termination of cycle.

**Solution:** Preheat autoclave, drying time cannot be accelerated, open autoclave door slightly. Routinely inspect valves. Malfunctioning valves can precipitate corrosion.

**Problem:** Some local water supplies contain excessive quantities of alkali. This can manifest itself by depositing corrosive matter on the instruments.

**Solution:** It is generally accepted that cold distilled or demineralized water be used during sterilization. An alternative is to use the local water supply, while instituting a program of preventive maintenance. Carefully clean surfaces with SKLAR KLEEN™, using SKLAR POLISH™ to remove difficult stains and SKLAR LUBE™ for proper lubrication.

### Pitting

**Problem:** Instruments are inevitably exposed to chemical compounds that initiate pitting. The most common are saline solutions and blood.

**Solution:** It is essential that instruments be rinsed with distilled or demineralized water and then cleaned routinely.

**Problem:** Some Non-Sklar detergents contain a chloride or have an acid base. If rinsing is not thorough, the residual detergent can precipitate pitting. Hydrochloric acid can be formed by the combination of chloride in the cleaner and steam, causing the instrument to pit.

**Solution:** Evaluate detergents without a chloride base. SKLAR KLEEN™ is recommended.

**Problem:** Instruments may be pitted when the detergent used has an excessively high PH. If instruments are not rinsed thoroughly, and then autoclaved, the heat increases the effect of the solution on the instruments.

**Solution:** Use only detergents specifically developed for instrument cleaning. Sklar Kleen™ products are pH balanced.

### Brownish Stain

**Problem:** This stain is more obvious on dull finish instruments. Most likely, it is a deposit of chromium oxide. The thin hard layer protects stainless steel from corrosion precipitated by the atmosphere. The brownish film (sometimes dull blue) occurs naturally when stainless is heated. Occasionally this stain can be traced to the sterilizer. Improper cleaning compounds could contain polyphosphates that cause the copper components in the sterilizer to be deposited by electrolytic action on the stainless steel instruments.

**Solution:** Water supply to autoclave should be cold and demineralized. Use the correct amount of SKLAR KLEEN™ as recommended for best results.

### Bluish Gray Stains

**Problem:** Cold sterilizing solutions.

**Solution:** In the preparation of the solution make certain the manufacturer's directions are followed accurately. To minimize discoloration use distilled water and add a rust inhibitor. Using the solution beyond recommended time limitations will cause the solution to become corrosive.

### Rust Deposit

**Problem:** Sterilizing instruments of different metals in the same cycle will cause rusting. An electrolytic action carries the carbon particles from the exposed metal and deposits them on the stainless steel instruments. The rapid oxidation of molecules results in a surface film of rust.

**Solution:** The ideal technique would be to sterilize the two types of instruments separately. It is recommended that chrome plated instruments that indicate signs of peeling or flaking be replaced with stainless steel instruments.

**Problem:** The rust film on the surface of stainless steel instruments can be caused by chemicals in the detergent. Excess amounts of iron or other minerals from the local water supply may cause the rust deposits.

**Solution:** It is recommended that instruments be rinsed with distilled or demineralized water. Surface rust can be removed by light buffing or an application of SKLAR POLISH™.

### Light and Dark Colored Spots

**Problem:** Spotting caused by slow evaporation of water drops identified with the mineral content of the water.

**Solution:** Eliminate water droplets by adhering to autoclave manufacturer's operating instructions. Autoclave door should not be opened until steam has been completely vented.

#### **No Steel is Truly "Stainless"**

It's a fact that so-called stainless steel is subject to both water-spotting and staining. However what many people identify as a "rust" problem usually turns out to be something else.

Most often the problem is actually a stain caused by a surface deposit. These deposits appear in a variety of colors depending upon the type of deposit involved. Once the cause is found and eliminated, most of the time the problem quickly diminishes or disappears completely.

As you probably know, stainless steel is ideally suited for the surgical suite because it is rust resistant, it can be honed to an extremely sharp edge or fine point, and it can be hardened to maintain the delicate, yet precise, requirements of the surgeon. But it is this hardenable quality – the amount of carbon used during the manufacturing process – coupled with harsh chemicals and improper care that renders stainless steel susceptible to corrosion.

Sklar's products are specially formulated to provide cost effective instrument care.