

INSTRUMENT STAIN TROUBLESHOOTING GUIDE

STAIN COLOR	PROBABLE CAUSE OF STAIN	COURSE OF ACTION
Brown/Orange to Reddish (Resembles rust)	<ul style="list-style-type: none"> High pH (>8) surface deposits – improper detergents or soaps, saline or chlorhexidine usage Dried blood Iodine or Betadine residue <p>HINT: <i>Perform eraser test.</i> Use a standard pencil eraser to try to rub off the discoloration. If the exposed metal is clean and smooth, the discoloration is a stain. If the exposed metal has pit marks, this is corrosion and will continue to corrode.</p>	<ul style="list-style-type: none"> Use a Neutral pH detergent Check surgical towels with litmus test to verify if detergent residues are present. Rinse instruments in warm water for at least 30 seconds Use suitable enzymatic cleaner If problem persists, check if local water supply is high in iron or other minerals. Consider changing to distilled or demineralized water
Black, Dark Brown and Pitting	<ul style="list-style-type: none"> Low pH (<6) acid residues on instrument surface or from surgical towels Exposure to chemical compounds from “cold soaking” Exposure to bleach or ammonia Improper detergents and/or soaps Dried blood 	<ul style="list-style-type: none"> Use a Neutral pH detergent Check surgical towels with litmus test to verify if detergent residues are present Eliminate exposure to, or any use of, chemicals, bleach or ammonia Rinse instruments in warm water for at least 30 seconds Use suitable enzymatic cleaner If problem persists, check if local water supply is high in iron or other minerals. Consider changing to distilled or demineralized water
Bluish-Green, Bluish-Black	<ul style="list-style-type: none"> Reverse plating is likely to occur when different metals are processed together Exposure to saline Exposure to blood or potassium chloride 	<ul style="list-style-type: none"> Separate instruments by type before cleaning or autoclaving Rinse instruments in warm water for at least 30 seconds Use suitable enzymatic cleaner
Rainbow or Multi-Color	<ul style="list-style-type: none"> Excessive heat Localized “hot spot” in the processing cycle 	<ul style="list-style-type: none"> Check the autoclave for proper temperature Double check manufacturer’s guidelines for sterilization
Light and/or Dark spots	<ul style="list-style-type: none"> Water spots from allowing instruments to air-dry Slow evaporation of water drops with mineral content Instrument wraps and towels may contain detergent residue 	<ul style="list-style-type: none"> Eliminate water droplets and moisture by adhering to autoclave manufacturer’s operating instructions Dry instruments completely upon washing/rinsing Thoroughly wash and rinse surgical wraps and towels with a neutral pH detergent If problem persists, check if local water supply is high in iron or other minerals. Consider changing to distilled or demineralized water
Bluish-Gray (with possible pitting)	<ul style="list-style-type: none"> Improper cold sterilization solution preparation 	<ul style="list-style-type: none"> Double check manufacturer’s guidelines for sterilization Change solution per manufacturer’s instructions Follow sterilization solution manufacturer’s directions closely, particularly temperature and soak times
Rust	<ul style="list-style-type: none"> Sterilizing instruments of dissimilar metals in the same cycle Chemicals in detergents Excess amounts of iron or other minerals in local water supply <p>NOTE: It is unlikely that surgical grade stainless steel will rust. What appears as rust is actually residual organic matter or mineral deposits in box locks, ratchets, serrations, hinges etc. which have been baked on to the surface.</p>	<ul style="list-style-type: none"> Separate instruments by metal types prior to sterilization Eliminate exposure to or any use of chemicals or bleach Rinse instruments in warm water for at least 30 seconds Use suitable enzymatic cleaner Use neutral pH detergents and consider changing to distilled or demineralized water particularly if local water supply is known to contain iron or other minerals