

Staining not rust?



What is staining?

Staining is a surface deposit on instruments, and most often mistaken for rust. After autoclaving, you may notice a stain on your instruments. Rusting instruments are very rare. Stains on instruments appear in many colors and, in most cases, the colors tell you about the origin of the stain.

Orange/brown stain

The problem is most often a phosphate layer (brown to light orange) on the instrument, which develops as a result of any of the following causes: water sources, detergents used to wash and clean instruments, surgical wrappings, cold sterilization solutions, or dried blood.

Black stain

The most common black stains are due to an acid reaction. Black stains may result from detergents used to clean the instrument; similar to brown stains caused by high pH in detergents. The black acid type stain can be caused by low pH (less than six) during autoclaving.

Dark brown stain

Dark brown stains are usually a result of dried blood left on an instrument. Blood should be removed from the surface of the instrument immediately. It will break down the instrument's surface with a chemical reaction.

Bluish/black stain

These are usually a result of plating and are extremely difficult to remove from the surface. The surface beneath the stain is always smooth, but the instrument may have to be refinished by Miltek to obtain good results. The cause for this stain is the mixing of dissimilar metals in ultrasonic cleaners and during autoclaving. Multi-color stains are most often due to excessive heat (chromium oxide stains), and actually show rainbow colors with a blue or brown overtone. When the instrument shows these heat stains, it may have lost part of its original hardness, and may not perform well. These instruments can usually be refinished, and the hardness tested. The staining can be polished off.

Additional Staining Information

As described, stains are either deposited onto instrument's surface, plated on, or in the case of rusting, developed from the instrument itself. The most common discoloration is due to deposit stains and usually occur during autoclaving.

To minimize staining, it is important that the autoclave runs perfectly, and that it has a well-functioning drying cycle. The instruments should come out completely dry, whether in wrappers or loose on a tray. If any moisture is left in the pack, or on the instruments, it will result in tiny water droplets on the instrument surface, which will leave a circular stain after drying. The color of this stain will depend on the pH, as well as the mineral or metal contents of the water. If the drying cycle works perfectly, however, there is a much less chance for deposits to form on the surface of the instrument.

Stains due to metal deposits or plating stains are always near the most magnetic parts of the instrument. New instruments are often highly magnetic in the locks, the serrations and ratchets. This happens because the carbon steel tools used to work on the instruments during production are very magnetic themselves. This magnetism wears off gradually during handling and sterilization. This is the reason why newer instruments tend to stain more visibly.