

NO STAINLESS STEEL IS TRULY “STAINLESS”

With decades of experience in the manufacture and sale of medical instruments, we realize fully well that corrosion is the most common cause of concern to any user. In any such event, the quality of material is immediately blamed to be inferior and the manufacturer unreliable. We feel this reaction is not fair in most cases. The objective of the following discussion is to make users aware, address misconceptions and answer most frequently asked questions regarding stainless steel and corrosion problems.

The term “stainless” is often taken too literally. The fact is that even under normal clinical conditions the finest stainless steel instruments can become rusted, spotted or stained.

Stainless steel, a British invention of the 50s, has proved to be the most suitable material for surgical and dental instruments. It is economically viable, acquires attractive and durable finish, can be honed to an extremely sharp edge or fine point, remains tough even in small dimensions and can be hardened.

Harden-able stainless steel is called Martenitic. It contains carbon that cause hardness. But it is also carbon that reacts with water and oxygen in air to cause oxidation (corrosion). Bulk of instruments are made with this type of stainless steel .

The next important content is chromium. It resists corrosion. The more the chromium the less are the chances of corrosion. It also gives it a shine. High chromium steel is called Austenitic, non-magnetic or 18-8 stainless. It is also commonly used in kitchen appliances and cutlery. However, it is not harden-able hence cannot be used for cutting instruments. (For more information on different grades of stainless steel, refer to our Guide to Materials).

Rough surface is more vulnerable to corrosion. This is why corrosion mostly occurs in serrations, knurling, ratchets, joints, cracks or cavities. But the most common cause of corrosion is improper care of instruments during use, cleaning and sterilization process.

Falcon implement a number of procedures and tests to make instruments more resistant to corrosion, these are:

Procedure during Manufacturing:

- (1) Selection of high quality Stainless Steel:
Falcon source and use stainless steel from approved suppliers, according to BS 5194: Part 1: 1991 / ISO 7153-1 and ASTM: F899-95. Mill test certificate confirming the chemical composition of material is obtained with every batch.
- (2) Use of Austenitic Stainless Steel:
As far as possible and where hardness is not required, Falcon makes instruments or their components, such as hollow handles, pins, screws or springs etc. with non-carbon material.
- (3) Electro polishing:
A process in which the instrument is made an anode in a drum containing suitable electrolyte, and a minute amount of metal is removed from its surface as the current flows. This technique helps polish areas inaccessible by the 'Polishing mops' i.e. jaws, ratchets, box joints etc
- (4) Passivation:
It is bathing of finished instruments in acid to burn out foreign particles imbedded on its surface during manufacturing process. It leaves a protective film on the surface.

Procedures during Testing:

At certain stages of the manufacture the following tests are applied to check the corrosion resistance of Falcon Instruments.

- (1) Copper Sulphate Test: A chemical test prescribed and recommended in ISO 13402: 1995 (E)
- (2) Boiling Water Test: This is not at random, 1 or 2 percent, as with most of our competitors. At Falcon it is 100 percent.

Conclusion:

As a responsible manufacturer, Falcon does its utmost to offer the highest possible quality of products. As a responsible user, you must also look after these as best as possible. By carelessness, corrosion can occur to instruments of any origin or manufacturer. Remember stainless steel is 'stainless' only under ideal conditions. (See our Instruments Care Guide). However, minor problems still occur, there is no need to panic. Most problems are easy to tackle with. (See our Guide to Trouble Shooting). If you still have a question, we will be only too pleased to answer.