



MAGNETISM AND STAINLESS STEEL HAND TOOLS

Steritool has two ranges of stainless steel hand tools. The original **Steritool** range mainly uses stainless steels that are magnetic – examples of these alloys are 420, 440, 17-4PH, Carpenter 455 and 465. These alloys are processed into tools by machining, casting or forging then heat treated, polished and passivated before shipping to the end user. These alloys are relatively easy to machine and result in a good quality tool that has good corrosion resistance, zero particulate generation and a long useful life, BUT – they are all **MAGNETIC!**

Note: 420, 430 and 440 are “Martensitic Stainless Steels” and have lower corrosion resistance than 17-4PH, 455 and 465 and NO resistance to Alcohol/H₂O mixes.

In 2008 Steritool developed a complimentary range of Non-Magnetic Stainless Steel hand tools, based on Carpenter BioDur 108 and the 300 Series Austenitic stainless steels. These tools were designed to cater for industries where zero magnetic permeability, zero residual magnetism and Electrostatic Discharge(ESD) are essential. Both of these stainless steel alloys are highly corrosion resistant – Carpenter BioDur 108 is an “Implant Quality” stainless alloy. Examples of these industries are avionics, MRI, electronics, wafer fabs, aerospace etc.

In the coming years both the Magnetic and Non-Magnetic hand tools will be further developed and enhanced based on feedback from end users and engineers.

SELECTION, CLEANING AND STORAGE OF STERITOOOL STAINLESS STEEL HAND TOOLS

Steritool products are all categorized as “**CLEAN**” tools – they generate zero particulate, homogenous material, so there is no plating to peel or chip and can be sterilized and sanitized through thousands of cycles, without deterioration and are compatible with stainless steel process equipment

If you are implementing or validating a hand tool cleaning program for your company, it is essential to select a few Steritool items to run through the system to check if there is any effect on the stainless. Many people feel that stainless steel can resist any type of chemical or gaseous process – this is not true – for example 420,430 and 440 have almost zero resistance to some Alcohol/H₂O₂ mixes (example: Ethanol, Isopropyl alcohol, Hydrogen Peroxide (H₂O₂)). In cases where a company is using these highly corrosive cleaning systems we manufacture wrenches from 316, 17-4PH or 455, alloys which have better resistance, but are more expensive than the 400 Series alloys.

Stainless steels also need Oxygen to keep the passive chromium oxide layer intact, if stainless steel is in an oxygen deprived environment it will corrode in a number of ways, quite rapidly and can result in dramatic failure. An example of this application is in underwater applications where a special alloy selection, testing and maintenance are required to stay within the design guidelines.

Having stainless steel tools in contact with normal carbon steel will lead to a gradual deterioration of the stainless due to carbon steel particulate transfer onto the stainless items. Examples of this are; using stainless wrenches on carbon steel fasteners or storing stainless tools in carbon steel tool boxes with or without carbon steel hand tools. Stainless tools that are contaminated with carbon steel can be passivated in a citric or nitric acid bath to remove the iron from the surface and restore the normal passive layer.