

What is oxygen clean or oxygen cleaning?

It is critical that an instrument's wetted parts are very "clean" when they may be in contact with a liquid or gas that is a highly reactive oxidizer such as oxygen or chlorine. Otherwise, an explosion could occur. Other times advanced surface preparation and cleaning is required when the instrument is used with expensive high purity gasses, and it is desired to eliminate the risk of contaminating the material inside the pipe or tube with any "dirt" or residues that may be left on the surface from its actual manufacture.



What is the basic procedure?

First, all items in the wetted flow stream must be compatible with oxygen service. This includes the materials of construction, gaskets, O-rings, lubricates, etc. Then all items are thoroughly cleaned with a solvent such as isopropyl alcohol or TSP to remove any organic and in-organic contamination. The cleaning is confirmed by testing in a dark room using a black light, which will fluoresce and identify any remaining contamination. Once the item is completely clean, it is wiped and vacuumed sealed in a double plastic bag.

The bag should identify the product has been cleaned for oxygen service, and a Certificate should also be included.

Specifications

There are several standards that will define the allowable remaining particulate matter, for specific pressure and temperature ranges. Here are some of the common standards.

- ASTM G93, "Standard Practice for Cleaning Methods and Cleanliness Levels for Material and Equipment Used in Oxygen-Enriched Environments"
- CGA G-4.1, "Cleaning Equipment for Oxygen Service"
- ASME BPE, "Bioprocessing Equipment"
- NiDi No. 9012, "Finishes for Stainless Steel"
- ASME B46.1, "Surface Texture (Surfaces Roughness, Waviness and Lay)"