



## ***ProSolv® 5408e* high performance vapour degreasing solvent for critical cleaning of medical devices**

Critical cleaning is vital throughout the medical supply industry for safe, successful operations and procedures. Manufacturers of medical instruments, implants and other devices using metals, glass, ceramics and plastics must select cleaning processes compatible with all these materials of construction, to remove oils and other contaminants from the manufacturing processes. The cleaning system must be proven to be safety critical and to leave no residues on the surfaces of the cleaned parts.

In this short article we discuss the benefits of condensation cleaning with *ProSolv® 5408e* vapour degreasing solvent for medical device cleaning compared to water-based cleaning.

### **Water based cleaning options**

Formulations for water based cleaners use combinations of surfactants to reduce the very high surface tension of water to allow penetration of the cleaning solution into minutes holes and very fine mechanical clearances. The solutions must solubilise oils, greases, cutting fluids, grinding and buffing compounds and remove particulate soils. Biocides are also present in these formulations to ensure no bioburden is carried over from the cleaning process.

After cleaning residues of chemicals must be removed or they may be a source of corrosion when the devices are in use. Multiple rinses in hot and cold de-ionised water using agitation of baskets or carriers or ultrasound to dilute and displace the cleaning liquids retained in minute holes, cavities and trapped between close tolerance metal surfaces.

Continuous production of high-quality deionised rinse water is extremely expensive, but the drying process is even more costly and environmentally challenging. Multiple cleaning and rinse tanks and drying ovens or tunnels need a lot of space and energy. Further controlled conditions are needed to cool parts after drying to prevent condensation of moisture, which can be growth media for bacteria, on the critically clean surfaces, before packing in sterile bags and containers for storage or shipping. High output water based cleaning equipment can use conveyerised high pressure targeted spray tunnels for automated high-volume production with integrated “blow off” drying and conditioning tunnels.

For smaller scale operations systems are available using baskets in single cell dishwasher type equipment or open tanks. The latter can use manual or automated handling to progress baskets through the cleaning cycle using similar aqueous based chemical formulations with multiple deionised water rinses and a separate drying oven. These systems can process several baskets or carriers at a time so are only suitable for small batch production. In either case long process times will determine the size and complexity of installations.

### **Compare the complications of water-based processing to the simplicity and speed of vapour degreasing using *ProSolv®5408e* solvents.**

Vapour degreasing or more properly condensation cleaning, is a proven process where a non-flammable halogenated solvent, safe for people and the environment is heated in the sump of a tank. Boiling solvent produces a dense vapour which is contained by condensation coils around the inner surfaces at the top of the tank. Solvent condensed on the coils is returned to the sump for reuse in a closed cycle.

Parts to be cleaned at ambient temperature are immersed in the vapour which condenses as solvent on the surfaces of the devices or parts in a continuous stream of perfectly clean solvent until the surfaces reaches vapour temperature when condensation ceases. Vapour degreasing uses only one tank with one liquid. Parts are cleaned, rinsed and dry in 3 to 5 minutes with parts hand hot ready for further processing, storage or packing into sterile packs for shipping.

*ProSolv®5408e* solvents were developed to provide superior critical cleaning performance for manufacturers of medical devices and equipment. The solvent is stable when used for vapour degreasing or cold dip cleaning and compatible with metals, including titanium, ceramics, glass and most plastics used in producing orthopaedic implants, dental, ophthalmic and surgical tools, lenses etc. *ProSolv®5408e* is a cost effective and sustainable solution to remove polar and non-polar soils and other contaminants and sets the standard for removal of machining and cutting oils, coolants, greases, grinding, buffing and polishing compounds, while leaving no residue.

Vapour degreasing and dip cleaning with *ProSolv®5408e* is a very effective steriliser of microbial contaminants. Exposing the microorganisms, which have cell walls made up of organic materials including lipids (Fats), to a powerful solvent is a very efficient disruptor of the cell walls. Once compromised the organism's inner workings lose this protection and the organism dies reducing the bioburden.

*ProSolv®5408e* is also an excellent solvent carrier for organic or synthetic medical lubricant. This application for coating needles, cannulas and instruments needs consistent quality and evaporation rate to produce, comfortable, pain free insertion for patients.

In many medical applications oxygen and gas supply systems are needed and cleaning at installation and when extensions of pipework and fittings are added is vital for safety.

*ProSolv®5408e* removes oil and organics leaving residue free, dry surfaces to standards approved by gas supply companies, and is compatible with all metals.

**Clearly solvent cleaning and vapour degreasing with *ProSolv®5408e* is a better choice than water cleaning. Faster throughput, lower costs and sustainability to meet the unique challenges in achieving the high standards demanded for medical device manufacturing.**

## FURTHER INFORMATION

Please visit our website [www.envirotech-europe.com/prosolv5408e](http://www.envirotech-europe.com/prosolv5408e) for information about other uses and applications for *ProSolv®5408e*.

Visit [www.envirotech-europe.com/applications-and-case-studies](http://www.envirotech-europe.com/applications-and-case-studies) for information about uses and applications for all EnviroTech Europe products.

For more advice, please telephone us on +44 (0) 20 8281 6370 or use our website contact form.

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