



Next-Generation Vapour Degreasing Solvent For Medical Device Cleaning

Precision cleaning plays a crucial role in medical device manufacturing, reinforcing both product quality and patient safety. Effective and validated cleaning processes are essential to prevent contamination and maintain compliance with industry standards. As global demand for medical devices grows, manufacturers must implement reliable, efficient cleaning strategies to uphold the highest standards of safety and performance.

The cleaning stage in medical device manufacturing removes oils, particulates, drawing/forming lubricants, and a range of other contaminants, which is essential to achieving the required levels of product quality and biocompatibility. Even trace impurities can affect device performance or compromise patient safety, making thorough and validated cleaning essential to eliminate potential risks.

Medical device cleaning using vapour degreasing with ultrasonics

Ultrasonic vapour degreasing is an ideal process for cleaning medical instruments because it combines three powerful cleaning mechanisms in a self-contained, controlled, residue-free environment. The process uses non-flammable solvent vapour to dissolve contaminants, followed by solvent immersion and intense ultrasonic agitation, to lift microscopic particles from complex geometries, internal passages, and difficult to reach crevices, essential for cleaning medical device instruments and implants.



The parts are immersed in clean solvent that has been contained in the system and distilled. This ensures the consistent, repeatable removal of all contaminants, meeting the stringent precision cleanliness standards required for sterilization. From an engineering perspective, the closed-loop vapour degreasing process offers significant advantages in process control and cost-efficiency. Unlike open-bath or aqueous cleaning, the continuous distillation within the degreaser ensures the purity of the final rinse solvent remains consistent, virtually eliminating batch-to-batch variation, which is crucial for successful process validation in the medical sector.

Modern medical devices are complex assemblies of metals, ceramics, polymers and glass. During each phase of machining and finishing, oils, lubricants, polishing compounds, and particulates are introduced, which must be thoroughly eliminated prior to assembly or sterilisation. The vapour degreasing process, in unison with *ProSolv®5408e*, from EnviroTech Europe, offers a proven and effective way to clean medical instruments, with parts emerging clean, dry, residue-free and ready for further processing within minutes.

The solvent of choice for the critical cleaning in the medical device cleaning industry

ProSolv®5408e is a high-performance, PFAS-free vapour degreasing solvent that delivers residue-free cleaning, essential for cleaning orthopaedic implants, dental, ophthalmic, surgical instruments, optical lenses and other medical devices. A next-generation solution which combines exceptional performance, environmental responsibility, and acts as a seamless replacement for discontinued 3M™ Novec™ fluids, such as Novec 71DE, 72DE and 73DE. It allows medical manufacturers to maintain the very highest standards.



ProSolv®5408e has exceptionally low surface tension and high solvency power, allowing it to penetrate deep into micron sized holes and close contact surfaces, effectively removing contaminants whilst remaining compatible with a wide range of metals and plastics. The solvent is stable when used for vapour degreasing or cold dip cleaning and compatible with metals, including titanium, ceramics, glass and most plastics.

PFAS-free, high performance vapour degreasing with Zero Ozone Depletion Potential (ODP) and Global Warming Potential (GWP) of less than 1

ProSolv®5408e is an advanced, premium quality cleaning solvent designed to meet the highest environmental and performance standards. Completely PFAS-free (free from Per- and polyfluoroalkyl substances), it features zero Ozone Depletion Potential (ODP) and ultra-low Global Warming Potential, making it a truly future-proof solution.

ProSolv®5408e can be used in most solvent cleaning systems, one tank vapour degreasing or multi tank immersion / vapour tank systems using ultrasonics or flush cleaning. Components

emerge dry, eliminating the need for secondary drying or deionised water systems. Ideal for these safety-critical cleaning operations, matching performance expectations from the medical device production sector.

ProSolv®5408e provides superior critical cleaning performance and is a cost effective and sustainable solution for the removal of polar and non-polar soils and other contaminants, setting the standard for removing of machining and cutting oils, coolants, greases, grinding, buffing and polishing compounds, while leaving no residue. It's low boiling point directly reduces energy consumption compared to high-boiling solvents or heated aqueous systems, contributing to a lower carbon footprint and operating cost. The complete lack of a water-based drying step eliminates the need for expensive ovens or DI water systems, translating into shorter cycle times (typically 3-5 minutes) and a reduced footprint on the manufacturing floor.

ProSolv®5408e Testing

Flash Point ASTM D3828, Flammable limits ASTM E918, Stock Loss ARP1755B, IGA Intergranular attack, Stress corrosion of titanium alloys ASTM F945-1.

Replacing discontinued 3M™ Novec™ fluids

The withdrawal of 3M™ Novec™ Engineered Fluids has left many manufacturers searching for compliant alternatives. *ProSolv®5408e* is engineered to fill that gap, offering a direct replacement for 3M™ Novec™ 71DE, 72DE and 73DE.

Benefits of using *ProSolv®5408e*

- Compatible with metals, ceramics, glass, and engineering plastics.
- Fast cycle times: 3-5 minutes per batch.
- PFAS-Free (Per- and polyfluoroalkyl substances).
- RoHS compliant.
- Low Carbon footprint due to the low boiling point of (46°C).
- Energy efficient: No heated rinses or drying ovens required.
- Stable with no additives, no testing required.
- Consistent results: Continuous solvent distillation maintains purity.
- Minimal non-volatile residue (>10ppm).
- Very low surface tension for penetration into the micron level crevices and holes, efficient cleaning in tight to reach places and complex geometries.
- Easy process monitoring with minimal effort and minimal waste generation, easy reclamation for reuse.
- High Solvency (KB Value 98) for a variety of contaminants.

Safe for users and the environment

- Safe for the environment, zero Ozone Depletion Potential (ODP).
- GWP of less than 1, AR4 100yr Integrated Time Horizon (ITH).

- Non-flammable (No Flash Point).
- Not classified as a carcinogen.
- Non-hazardous for transportation.

Conclusion

As medical device production faces stricter environmental and regulatory demands, *ProSolv®5408e* offers a powerful, sustainable, and technically advanced solution for critical cleaning applications. It delivers rapid, residue-free cleaning, broad material compatibility, and low environmental impact, making it an ideal choice for manufacturers seeking to maintain the highest levels of cleanliness. *ProSolv®5408e* provides a rare combination of cleaning power, safety, and regulatory alignment, allowing users to transition confidently away from high-impact or discontinued solvents without compromising performance.

About EnviroTech Europe

EnviroTech Europe develops and supplies advanced cleaning and surface-treatment products for critical and environmentally responsible applications. With decades of experience in the medical, aerospace and precision engineering sectors, we supply a comprehensive range of vapour degreasing and metal-treatment solutions, and our technical staff can offer advice on legislative changes which affect your industry. EnviroTech Europe is a member of the Chemical Business Association and is accredited to ISO 9001:2015. All products are supplied and supported by EnviroTech Europe Ltd, manufactured in the United Kingdom and available on short delivery times through a dedicated team of distributors worldwide.

Further Information

Please visit our website <https://www.envirotech-europe.com> for information about all our products. For more advice, please telephone us on +44 (0) 20 8281 6370 or use our website contact form.

Supplied and supported by



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