



ProSolv[®]
5408e

Further guidance for cleaning oxygen system components

This is an addendum our article 'Guide to critical cleaning of oxygen components and services' <https://www.envirotech-europe.com/wp-content/uploads/2024/03/ProSolv5408e-Application-Case-Studies-Cleaning-of-Oxygen-Components-and-Services-V8.pdf>

The cleaning of oxygen system components is a critical step in ensuring their safety and efficiency. It is essential to adhere to regulatory guidelines, manufacturer's instructions, and industry best practices throughout the cleaning process to ensure the safety of components. Regular cleaning and maintenance of oxygen components are essential to prevent the risk of infection or respiratory complications in patients.

Medical device flush cleaning is a specific cleaning method used for devices with internal channels, lumens, or cavities that are difficult to access with traditional cleaning methods. This method involves flushing the internal components of the device with a cleaning solution to remove debris, bioburden, and other contaminants. Oxygen components such as tubing, regulators, masks, and humidifiers need regular cleaning to prevent the buildup of contaminants and maintain proper functionality. Solvents play a crucial role in flush cleaning processes, as they are the primary agents responsible for dissolving and removing contaminants from surfaces, internal channels, or parts of equipment.

CLEANING OF OXYGEN SYSTEM COMPONENTS WITH *ProSolv[®]5408e*

In a well-ventilated area with operators equipped with suitable PPE, masks, gloves and aprons: Using Two or three containers or tanks with lids, suitably sized to fully immerse parts or basket of parts without the solvent overflowing. Fill tanks with *ProSolv[®]5408e*.

Tank 1 is used to clean off the gross soils – swarf, cutting fluid, machining debris and polishing pastes from the part with agitation. **Tank 2** is used as an intermediate rinse to remove oils and dilute contaminants carried over from tank 1. **Tank 3** is the final rinse to ensure absolute surface cleanliness.

At the end of each cycle drain **Tank 1**, flush clean and replace **Tank 3**. Refill with new solvent to become final rinse. The used *ProSolv®5408e* can be transferred to a storage drum or tank for recycling. Allow the parts to drain and blow the solvent out of small drillings, blind holes etc with either nitrogen or oil free air. The Solvent will evaporate quickly leaving the parts oil free and sterile.

Cleaned parts must only be touched with clean gloved hands. Store / ship in clean sterile plastic Ziplock bags. The solvent will evaporate readily so keep the tanks covered when not in use.

NOTE: *site the tanks in a well-ventilated area with extraction if possible.*

CLEANING OF PIPES AND TUBING

When on site flush cleaning of tubes and piping systems is required all valves on the system to be cleaned should be removed, disassembled, and cleaned separately, with blanks installed.

Ensure the area is well-ventilated with fans and extraction equipment in confined areas and operators equipped with suitable PPE, masks, gloves, aprons. A drum pump electric or hand operated with a flexible tube connection for delivering the solvent to the open end of the pipe or tubing is used to flush the internal surfaces. The other end of the pipe or tube needs to drain into tank where samples can be taken to determine when no particles are being removed and the emerging solvent is water white, completely clean. Using a fresh drum of *ProSolv®5408e* connect drum pump and the delivery tube to the end of pipe/tube to be cleaned using a screwed or compression fitting.

The drainage end of the pipe or tube should be fitted with a flexible tube into a tank or drain sump allowing samples to be taken in a glass bottle or tube at regular intervals to be sure when no particles or soils are being expelled. The colour of the solvent will change as oil and soluble contaminants are removed and flushing must continue until the flow is totally clear and water white.

At the end of the cleaning process use a dry nitrogen to purge any *ProSolv®5408e* that may be entrapped in a blind hole, dead space, or any other places in the system. Use photo ionization detector (PID) testing, or other methods to determine when all the *ProSolv®5408e* used for cleaning is removed in the system that was cleaned at the discharge end of the system. Purging is complete and the system is clean when the *ProSolv®5408e* cannot be detected in the dry nitrogen purge gas exiting from the system.

After the system purge is complete and the system is clean remove the blanks and replace cleaned dry valves using new gaskets. A wipe of the pipe/tubing surface at the inlet and outlet using solvent saturated lint free cloth completes the cleaning. If not connected immediately to other parts of the system enclose both ends of cleaned item to prevent recontamination.

Used solvents should not be reused for flushing but can be used as top up for vapour degreasing tanks or recovered for reuse by a simple distillation process. Removal from site should use licensed disposal companies.



THE SOLVENT OF CHOICE FOR THE CRITICAL CLEANING OF OXYGEN SYSTEM COMPONENTS

Zero Ozone Depletion Potential (ODP) and very low Global Warming Potential (GWP) solvent cleaner for high performance critical cleaning of oxygen system components and services.

ProSolv® 5408e has been developed to provide superior critical cleaning performance, suitable for many different industries. High Solvency (KB Value 98) for removal of organic residue and oils, compatible with organic and synthetic oils and most plastics and metals.

ProSolv® 5408e is a high-performance solvent cleaner used for sustainable and future proof degreasing. It has a GWP of less than 1, with a 100-year Integrated Time Horizon (ITH). Soft on the environment and safe for users, it offers improved cleaning at lower costs.

ProSolv® 5408e ticks all the boxes and is the perfect profile for a modern degreasing solvent. Exceptionally low surface tension to penetrate micron sized holes and close contact surfaces. Sustainable and secure for the future. Non-carcinogenic, low boiling point, economical with energy with low solvent losses, faster production, reduced costs, easy handling. Exceptionally low surface tension to penetrate micron sized holes and close contact surfaces.

ProSolv® 5408e has a unique range of characteristics making it the solvent of choice for cleaning oxygen components and service line cleaning, aircraft avionics and aerospace parts and servicing, precision optics, medical and high vacuum components and electronics.

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 for complex mechanical and electronic components with blind holes and channels and close mounted electronics or for removing grinding and buffing soils on surfaces.

EFFICIENT AND ECONOMICAL

- Fast precision cleaning with short cycle times.
- Can be used in any vapour degreasing equipment, lower energy consumption and lower maintenance.
- Can be used as a line flushing solvent.
- Ideal replacement for Trichloroethylene, n-Propyl Bromide, Perchloroethylene, high ODP/GWP fluorocarbons and HCFC based solvents.
- Excellent choice to replace flammable solvents such as MEK, Acetone, Isopropyl Alcohol (IPA) or Hydrocarbons.
- Stable with no additives, no testing required.
- Improved productivity, parts exit the machine cool, dry and spot-free with no drying required.
- Fast drying.
- Minimal non-volatile residue (>10ppm).
- High density solution, excellent for ultrasonic cleaning.
- Mid-range boiling point (46°C), processed components easily handled.

- 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, minimal effort and minimal waste generation, easy reclamation for reuse.
- High Solvency (KB Value 98) for a variety of contaminants.
- Compatible with a broad range of substrates.

SAFE FOR USERS AND THE ENVIRONMENT

- Safe for the environment, Zero Ozone Depletion Potential (ODP).
- Very low Global Warming Potential (GWP).
- GWP of less than 1, AR4 100yr Integrated Time Horizon (ITH).
- Non-hazardous for transportation.
- Non-flammable (No Flash Point).
- Not classified as a carcinogen.
- RoHS compliant.

Listed above are some of the benefits from using *ProSolv[®]5408e*, a sustainable degreasing solvent for critical cleaning and an economical and efficient replacement solution for cleaning systems using older legacy solvents, which are now either banned or being phased out. EnviroTech Europe have many years of experience and our experts are available to guide you through your solvent cleaner changeover procedures or to advise on equipment. We have extensive partnerships with equipment manufacturers through our distributors worldwide and information and advice on solvents and solvent systems and which need to be considered. *Refer to the MSDS for storage, use, and health and safety Personal protection equipment (PPE).*

FURTHER INFORMATION

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

Visit 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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