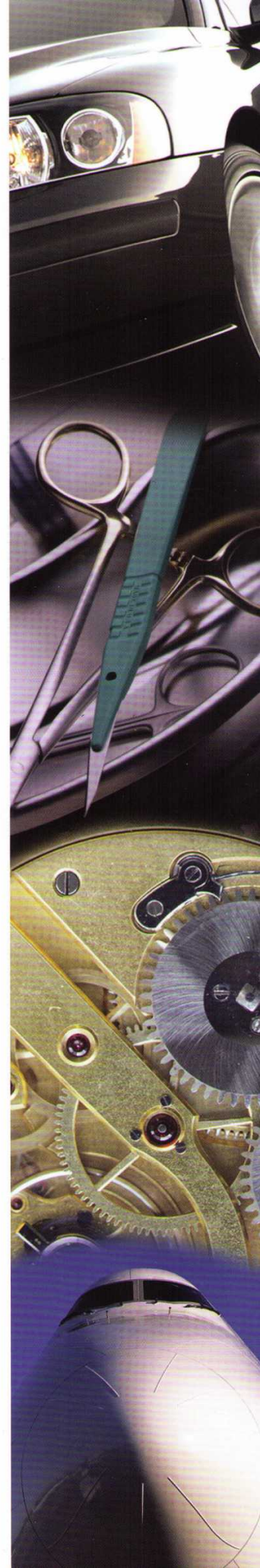


# Precision Cleaning Products





## Advanced Products For Advanced Cleaning

**Total Solution.** Petroferm offers manufacturers the most complete range of cleaning products on the market. From manual cleaning to sophisticated parts washing, Petroferm's sales and technical professionals are trained to help customers select, evaluate, and implement the most appropriate products and processes. By working together with top cleaning equipment manufacturers, we can present a turnkey approach that addresses requirements for both throughput and cleanliness.

**Trusted Brands For High Reliability Cleaning.** For more than 25 years, Petroferm has developed and produced solutions engineered to meet industries' toughest cleaning challenges. Brands such as AXAREL®, BIOACT®, CleanSafe™, LENIUM®, and RustSafe™ have been trusted and approved for cleaning high-reliability components at companies in over 30 countries worldwide.

**Safety, Health, & Environmental Responsibility** are cornerstones of both our products and work practices. From reducing VOC emissions to eliminating exposures to limiting fire risks, we have extensive experience helping customers find suitable replacements for acetone, IPA, MEK, MPK, mineral spirits, trichloroethylene (TCE), perchloroethylene (PERC), methylene chloride (MeCl), HCFCs and other hazardous solvents. Contact us today to learn how we can address your solvent substitution initiatives.

### Petroferm products are used in the following applications:

- General Purpose Cleaning and Degreasing
- Fine Metal Precision Cleaning
- Composite and Plastics Cleaning
- Surface Pretreatment
- Pre- and Post-Inspection Cleaning
- Adhesive and Mastic Removal
- Removing Sealant Residues
- Asphalt Extraction and Release Agents
- Corrosion Protection
- Wax Removal and Deblocking
- Powdered Metal Debinding
- Wax Masking
- Silicone Deposition and Removal
- Tube Swelling





## IMMERSION CLEANERS

Petroferm offers a full complement of cleaning technologies engineered to operate in both immersion and ultrasonic cleaning equipment.

Product	Type	Flash Point	Features
CleanSafe 686	Aqueous, Alkaline	None	<ul style="list-style-type: none"> <li>• High performance cleaner designed for agitated immersion equipment</li> <li>• Contains corrosion inhibitors for steel alloys</li> <li>• Safe on all metals</li> </ul>
CleanSafe 585	Aqueous, Alkaline	None	<ul style="list-style-type: none"> <li>• Ultrasonic cleaner designed to remove buffing compounds, coolants, oils, particulates</li> <li>• Safe for use on metals and plastics</li> <li>• Protects against oxidation of copper and steel alloys</li> </ul>
CleanSafe 7449 YHA	Aqueous, Alkaline	None	<ul style="list-style-type: none"> <li>• Low-foaming cleaner formulated for aluminum alloys</li> <li>• Excellent for cleaning tubes and parts with complex geometries</li> <li>• Non-etching</li> </ul>
CleanSafe 50E Plus	Aqueous, Acidic	None	<ul style="list-style-type: none"> <li>• Formulated to clean, brighten and protect copper and copper alloys</li> <li>• Contains additives to prevent oxidation</li> </ul>
AXAREL 2000 ✈	Solvent	144°F/62°C	<ul style="list-style-type: none"> <li>• Safe, low odor alternative to IPA, mineral spirits, Stoddard solvent, PD-680 solvents</li> <li>• Suitable for sink-on-a-drum and solvent cleaning stations</li> </ul>
AXAREL 3000 ✈	Solvent	205°F/96°C	<ul style="list-style-type: none"> <li>• Slow evaporating solvent designed to remove heavy greases and high melt point soils</li> <li>• May be operated at elevated temperatures</li> </ul>
BIOACT 280 ✈ BIOACT 280E 🌱	Solvent	285°F/141°C	<ul style="list-style-type: none"> <li>• Biobased cleaners designed to remove waxes, buffing compounds, pitch</li> <li>• Replaces TCE, PERC, &amp; petroleum derived solvents</li> <li>• 18 - 24 month bath life</li> </ul>
BIOACT VSO	Solvent	215°F/102°C	<ul style="list-style-type: none"> <li>• Formulated to dissolve support wax used in 3D model making</li> <li>• Replaces acetone, mineral spirits, kerosene</li> </ul>
SOLVAG SA-70 SOLVATING AGENT	Solvent	223°F/106°C	<ul style="list-style-type: none"> <li>• Low volatility cleaner used in bi-solvent and co-solvent vapor degreasing</li> <li>• Selected for its materials compatibility and adjustability of operating temperatures</li> <li>• Used in combination with LENIUM FRA (see <i>Vapor Degreasing Section</i>)</li> </ul>

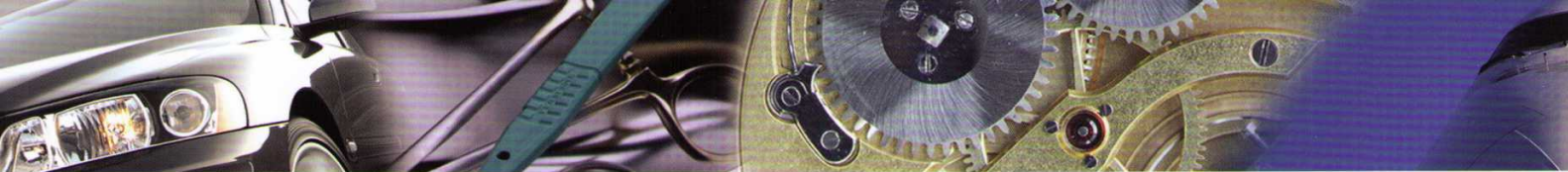
Approved and Certified Product Symbols Legend:



Aerospace Approvals



USDA Certified Biobased



## SPRAY CLEANERS

Designed for inline and cabinet parts washers, Petroferm's advanced line of low-foaming solutions exhibits excellent materials compatibility and the versatility of adjusting concentrations and temperatures.

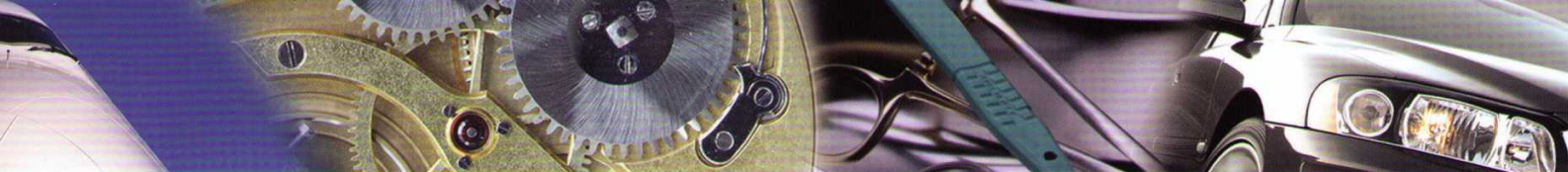
Product	Type	Features
CleanSafe 7448	Aqueous, Alkaline	<ul style="list-style-type: none"> <li>• Aggressive cleaner for steel alloys</li> <li>• Removes heavy greases, lubricants, metalworking fluids, oils</li> <li>• Contains corrosion inhibitors</li> </ul>
CleanSafe 7449 YHA	Aqueous, Alkaline	<ul style="list-style-type: none"> <li>• Non-etching cleaner for aluminum alloys</li> <li>• Removes heavy greases, lubricants, metalworking fluids, oils</li> </ul>
CleanSafe 7200 DTX	Aqueous, Alkaline	<ul style="list-style-type: none"> <li>• Cleaner for both ferrous and non-ferrous alloys</li> <li>• Protects against oxidation of copper and steel alloys</li> </ul>
CleanSafe 7950	Aqueous, Alkaline	<ul style="list-style-type: none"> <li>• Easy rinsing cleaner for stainless steel and titanium alloys</li> <li>• Does not contain silicates</li> </ul>
CleanSafe 787C ✈	Aqueous, Alkaline	<ul style="list-style-type: none"> <li>• Non-foaming cleaner designed for highly agitated parts washers</li> <li>• Safe for use on all metals, plastics, composites, faying surfaces</li> </ul>
AXAREL 56 ✈	Solvent	<ul style="list-style-type: none"> <li>• Water rinsable cleaner with excellent solvency and high flash point</li> <li>• Removes buffing compounds, greases, metalworking fluids, oils, high-melting waxes</li> <li>• Used at 5 - 25%</li> </ul>

## MANUAL CLEANERS

Engineered for low impact on health, safety, and the environment, Petroferm's manual cleaners are suitable drop-in replacements for acetone, isopropyl alcohol (IPA), methyl ethyl ketone (MEK), mineral spirits, and other hazardous solvents.

Product	Flash Point	Features
BIOACT 105 ✈	105°F/41°C	<ul style="list-style-type: none"> <li>• Safe, fast drying alternative to acetone, IPA, MEK, MPK and other hazardous solvents</li> <li>• Lowers workplace exposures, emissions, fire risk and usage</li> <li>• Removes adhesive and sealant residues, greases, lubricants, oils, silicones, waxes</li> </ul>
BIOACT 105 Wipes ✈	105°F/41°C	<ul style="list-style-type: none"> <li>• BIOACT 105 in pre-saturated wipes that are safe, convenient and economical</li> </ul>
AXAREL 1000 ✈	127°F/53°C	<ul style="list-style-type: none"> <li>• Low odor, fast drying solvent designed for general clean-up and surface preparation</li> <li>• Replaces acetone, IPA, mineral spirits, and other hazardous solvents</li> <li>• Lowers workplace exposures, emissions, fire risk and usage</li> </ul>
AXAREL 1000 Wipes ✈	127°F/53°C	<ul style="list-style-type: none"> <li>• AXAREL 1000 in pre-saturated wipes that are safe, convenient and economical</li> </ul>
AXAREL 2000 ✈	144°F/62°C	<ul style="list-style-type: none"> <li>• Low odor solvent with a slightly higher flash point than AXAREL 1000</li> <li>• Substitute for IPA, mineral spirits, Stoddard solvent, and PD-680 solvents</li> <li>• Lowers workplace exposures, emissions, fire risk and usage</li> </ul>
LENIUM FHD ✈	None	<ul style="list-style-type: none"> <li>• Extremely fast drying fluorinated solvent</li> <li>• Non-flammable, non-ozone depleting, low toxicity</li> </ul>





## HALOGEN FREE SOLVENTS FOR SEALED CLEANING SYSTEMS

Formulated for extraction and reclamation, Petroferm offers a diverse range of approved cleaning solutions suitable for use in today's solvent-based, sealed cleaning equipment.

Product	Distillation Range	Features
BIOACT 145 ✈	350-450°F/ 177-232°C	<ul style="list-style-type: none"> <li>Designed to remove oil-soluble and water-soluble soils such as greases, minerals oils, polishing compounds and water-based emulsions</li> <li>Based on blend of modified alcohols and hydrocarbons</li> </ul>
AXAREL 2300	340-460°F/ 171-238°C	<ul style="list-style-type: none"> <li>Designed to remove water-soluble and oil-soluble soils</li> <li>Exceptional on water-based lubricants – soluble oils, semi-synthetics, synthetics</li> <li>Based on a blend of modified alcohols</li> </ul>
AXAREL 2000 ✈	372-405°F/ 189-207°C	<ul style="list-style-type: none"> <li>Designed to remove oil-soluble soils such as greases, hydraulic fluids, oils</li> <li>Based on highly-refined hydrocarbons</li> </ul>

## HALOGENATED SOLVENTS FOR VAPOR DEGREASING

Developed for vapor degreasing equipment, Petroferm offers a full range of solutions suitable for replacing trichloroethylene (TCE), perchloroethylene (PERC), methylene chloride (MeCl), and hydrochlorofluorocarbons (HCFCs).

Product	Type	Boiling Point	Features
LENIUM FHD ✈	Fluorinated	99°F/37°C	<ul style="list-style-type: none"> <li>Safe, effective alternative to TCE, PERC, MeCl, HCFCs, nPB</li> <li>Non-flammable, non-ozone depleting, low toxicity</li> </ul>
LENIUM FRA	Fluorinated	108°F/42°C	<ul style="list-style-type: none"> <li>VOC-exempt rinse agent used in bi-solvent and co-solvent vapor degreasing</li> <li>Non-flammable, non-ozone depleting, low toxicity</li> <li>Used in combination with SOLVAG SA-70 (see <i>Immersion Section</i>)</li> </ul>
LENIUM GS ✈	n-Propyl Bromide	160°F/71°C	<ul style="list-style-type: none"> <li>Highly stabilized alternative to TCE, PERC, MeCl, HCFCs</li> <li>Extend solvent life with SuperBooster additive</li> </ul>

## MEDICAL DEVICE CLEANERS AND SURFACE TREATMENTS

Petroferm offers cleaning solutions and surface treatments engineered for a wide range of medical device components, including cardiovascular and orthopedic implants, surgical tools and instruments, and diagnostic equipment.

Product	Process	Features
CleanSafe 585	Aqueous Cleaning	<ul style="list-style-type: none"> <li>Ultrasonic cleaner designed to remove buffing compounds, coolants, oils, particulates</li> <li>Safe for use on metals and plastics including PEEK and UHMW-PE</li> </ul>
LENIUM FHD	Vapor Degreasing	<ul style="list-style-type: none"> <li>Safe, fluorinated solvent designed to replace HCFCs and nPB</li> <li>Non-flammable, non-ozone depleting, low toxicity</li> </ul>
LENIUM DF	Deposition Fluid	<ul style="list-style-type: none"> <li>Carrier fluid for silicone based lubricants</li> <li>Does not attack sensitive plastic components</li> <li>Also used for manual cleaning</li> </ul>
LENIUM TS	Tube Swelling	<ul style="list-style-type: none"> <li>Swelling fluid for silicone tubing</li> <li>Reversible without material degradation</li> <li>Does not attack sensitive plastic components</li> </ul>





## CORROSION INHIBITORS

Designed for steel alloys, Petroferm's line of corrosion inhibitors meets requirements for both short and long-term protection.

Product	Type	Features
<b>RustSafe 27 SDST</b>	Aqueous, Alkaline	<ul style="list-style-type: none"> <li>• Water-dilutable inhibitor designed to protect for 30 to 60 days</li> <li>• Used in final rinse stage at concentrations between 1-3%</li> </ul>
<b>RustSafe 2400</b>	Solvent	<ul style="list-style-type: none"> <li>• Non-staining inhibitor designed for long-term protection</li> <li>• &gt;60 days humidity cabinet on polished steel</li> <li>• Leaves a dry, ultra-thin film</li> </ul>

## MASKING WAX

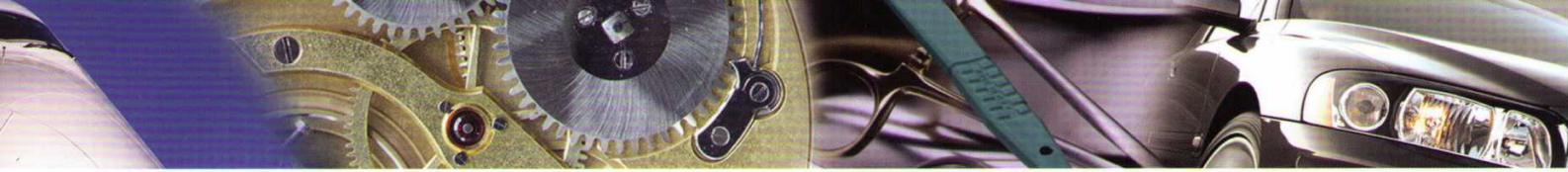
Suitable as an alternative to traditional paraffinic waxes, Petroferm provides a series of highly-refined waxes designed for component masking in selective plating operations.

Product	Melt Point Range	Features
<b>AEROWAX MT</b> ✈	168-180°F/ 76-82°C	<ul style="list-style-type: none"> <li>• Medium temperature masking wax</li> <li>• Excellent adhesion, flexibility, visibility</li> <li>• Easily removed with BIOACT 280 series (<i>see Immersion Cleaners Section</i>)</li> </ul>
<b>AEROWAX HT</b>	180-190°F/ 82-88°C	<ul style="list-style-type: none"> <li>• High temperature masking wax</li> <li>• Does not exhibit cracking</li> <li>• Easily removed with BIOACT 280 series (<i>see Immersion Cleaners Section</i>)</li> </ul>

## ASPHALT & ROAD CONSTRUCTION SOLUTIONS

Petroferm supports the road construction industry with a line of solutions for extraction testing, asphalt release and general purpose clean-up.

Product	Process	Features
<b>LENIUM RV</b>	Asphalt Extraction	<ul style="list-style-type: none"> <li>• Asphalt Content Extraction solvent based on n-Propyl Bromide (nPB)</li> <li>• Used in testing procedures for Asphalt Content Extraction (ASTM D2172), Binder recovery extractions (ASTM D1856) using Rotavapor, or combined extraction and recovery methods (AASHTO T391-031)</li> </ul>
<b>BIOACT AE-O</b> 🌿	Asphalt Extraction, General Clean-up	<ul style="list-style-type: none"> <li>• Free-rinsing, biodegradable solvent designed for Asphalt Content Extraction testing method PF41 or method PF42</li> <li>• Safe alternative to trichloroethylene (TCE) and methylene chloride (MeCl)</li> <li>• Also used to remove asphalt buildup on tools and heavy equipment</li> </ul>
<b>BIOACT AR-405</b>	Asphalt Release	<ul style="list-style-type: none"> <li>• Biodegradable truck bed coating designed to provide quick release for hot mix</li> <li>• Non-hazardous alternative to diesel and other hydrocarbons</li> </ul>



**Petroferm products are used in the following markets and industry segments:**

- Aerospace and Aviation
- Asphalt and Road Construction
- Automotive and Light Vehicles
- Electronics and Printed Circuit Boards
- Electrical Equipment and Appliances
- Floor Covering and Carpet
- Hand Tools and Hardware
- Heavy Transportation and Mining
- Furniture and Office Equipment
- Jewelry and Precision Instruments
- Magnetic Devices and Magnets
- Machine Tools and Metal Cutting
- Marine and Floating Vessels
- Medical Device Implants and Surgical Instruments
- Metal Injection Molding (MIM)
- Precision Manufacturing
- Nondestructive Testing (NDT)
- Optics and Optical Instruments
- Rail Transportation, Passenger and Cargo
- Surface Finishing and Coatings
- 3D Rapid Prototyping and Model Making
- Space Vehicle Propulsion, Manned and Unmanned
- Weapons, Ordnances and Munitions
- Wind Turbines and Components