

## Precision Cleaning Agents for Medical Device Manufacturing

- Orthopaedic Products
- Cardiovascular Devices
- Surgical Instruments
- Diagnostic Equipment

Cleaning is a critical practice in the manufacture of high reliability medical devices. As a global supplier, Petroferm offers a diverse portfolio of cleaning technologies and surface treatments developed to meet the performance, compatibility and environmental requirements of the medical device market.

### Aqueous Cleaning

### CleanSafe™ Series

*Biodegradable, low-VOC cleaners designed to replace caustic solutions and cleaners with high levels of silicates.*

**CLEANSAFE 787C** is an ultra low-foaming cleaner formulated to operate in spray-in-air and agitated immersion cleaning equipment.

**CLEANSAFE 585** is a high performance ultrasonic cleaner designed to remove buffing and polishing compounds, lubricants, processing fluids and particulate.

### Non-Aqueous Cleaning

### AXAREL® and BIOACT® Series

*Powerful cleaners designed to replace alcohols, ketones, and other solvents with high environmental, worker health and safety impact.*

**AXAREL 2000** is an essentially odorless cleaner formulated to provide high solvency and moderate dry times. Suitable for use in both hand wipe and immersion applications.

**BIOACT 105** is a powerful cleaner formulated to remove hard-to-clean soils such as adhesives, greases, inks, mold release compounds, silicones, and waxes. Available in liquid and pre-saturated hand wipes.

**BIOACT 121** is a high-purity, bio-based cleaner with low environmental impact and exposure risk. Suitable for use in both hand wipe and immersion applications.

### Vapor Degreasing

### LENIUM® Series

*Designed to replace most chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) in open-top and vacuum vapor degreasers.*

**LENIUM FRA** is a non-ozone depleting, VOC-exempt solvent based on a blend of hydrofluorocarbons (HFCs). Used as a rinsing agent in co-solvent or bi-solvent vapor degreasing, it effectively removes a wide range of contaminants while exhibiting superior material compatibility with polymers and elastomers.

**LENIUM XS** is a powerful solvent based on n-propyl bromide (nPB). Used alone, it effectively removes difficult-to-clean soils such as buffing and polishing compounds, greases, release agents, silicones and waxes.

#### Also available from Petroferm

**Tube Swelling**  
LENIUM TS

**Deposition Fluid**  
LENIUM DF

**Defluxing**  
BIOACT EC-88

**Deblocking**  
BIOACT 288

### Aqueous Cleaning

Product	pH (Conc. 10%)	Concentration (%) Temperatures °F (°C)	Cleaning Methods	Biodegradable	Conformance Testing (ASTM)
CleanSafe 787C	11.2	2-15 100-180 (38-82)	Spray Immersion	Yes	D-816, F-483, F-519, F-945 F-1110, F-1111 SAE ARP 1755B
CleanSafe 585	11.2	2-10 70-180 (21-82)	Ultrasonics	Yes	F-945

### Non-Aqueous Cleaning

Product	Flash Point °F (°C)	Concentration (%) Temperatures °F (°C)	Cleaning Methods	Odor	Conformance Testing (ASTM)
AXAREL 2000	144 (62)	100 (38) Ambient	Immersion Hand Wipe	Essentially Odorless	D-130, D-1296, D-1353, F-483, F-945, F-110
BIOACT 105	105 (41)	100 (38) Ambient	Immersion Hand Wipe	Mild Citrus/ Alcohol	F-483, F-519, F-945, F-1110
BIOACT 121	117 (47)	100 (38) Ambient	Immersion Hand Wipe	Mild Citrus	F-483, F-484, F-519, F-945, F-1110

### Vapor Degreasing

Product	Flash Point °F (°C)	Boiling Point °F (°C)	Cleaning Methods	Ozone Depleting Potential	Conformance Testing (ASTM)
LENIUM FRA	None	108 (42)	Co-Solvent Bi-Solvent	None	—
LENIUM XS	None	156 (69)	Mono- Solvent	0.013-0.018	F-483, F-519, F-945, F-1110, SAE ARP 1755B

### Components Cleaned

Arthroscopic Probes and Tubing  
Catheters and Catheter Balloons  
CT and X-Ray System Hardware  
Endodontic Hardware  
Heart Valve Assemblies  
Hybrid Microelectronic Circuits  
Scalpels and Skin Closure Needles

### Typical Substrates

Titanium  
Nitinol  
Cobalt-Chrome  
Stainless Steel  
Copper and Copper Alloys  
Ceramics  
PEEK and UHMW-PE

### Cleaning Methods

Ultrasonic  
Spray-In-Air  
Agitated Immersion  
Vapor Degreasing  
Vacuum Degreasing  
Semi-Aqueous  
Hand Wipe



ISO 9001:2000  
File No: A2894



### Global Sales Offices

Americas  
+1 847 244 3410

Europe  
+44 0208 942 9177

Asia-Pacific  
+1 904 277 5245

Greater China  
+86 1501 381325

India  
+91 984 531 2985