TYLER
Research Corporation
Biomedical Engineering

Product: LPMRE-12PSF

Material: Polysulfone with silicone seals and stainless steel screws

The LPMRE-12PPSF is manufactured from Polysulfone, an advanced engineered thermoplastic polymer capable of withstanding a temperature range of -100°C to 150°C. The LPMRE-PSF series biofilm devices may be safely sterilized using an autoclave. LPMRE-series devices contain dual ultrahigh purity platinum electrodes located in side channels adjacent to the primary flow channel. These are accessed electrically through the pin jacks located on either side of the manifold base. An electric field may be set up between these two electrodes (commonly used when the biostuds are not electrically conductive), or they may be jumpered together as a single electrode, with another wire serving to join the biostud retention screws together in series serving as the opposite electrode when the biostuds are electrically conductive.

Polysulfone is **NOT COMPATIBLE** with the following:

- *Acetone*
- *Acetonitrile*
- *Benzene*
- *Chloroform*
- *Dimethylformamide (DMF)*
- *Dimethylsulfoxide (DMSO)*
- *Ethyl acetate*
- *Methyl ethyl ketone*
- *Methylene chloride*
- *Perchloroethylene*
- *Phenol*
- *Pyridine*
- *Sulfuric acid*
- *Toluene*
- *Trichloroethylene*
- *Xylene*

Polysulfone has **LIMITED RESISTANCE** to the following:

- *Acetate*
- *Ammonia*
- *Butyl acetate*
- *Carbontetrachloride*
- *Isopropanol*

**Please note that the chemical lists are not exhaustive, but refer to the most commonly encountered laboratory chemicals*

Sterilizing LPMRE-PSF series devices:

1. The fully assembled LPMRE-12PSF may be autoclaved with biostud holders and biostuds in place (for biostuds that can withstand autoclaving) or separately from the holders and/or biostuds for those (such as acrylic or PVC) that cannot be autoclaved.
2. Attach silicone or vinyl tubing (1/4" or 6mm ID) to the inlet/outlet ports, fold and tape the ends of the tubing closed. Place the entire device in an autoclave bag or wrap in surgical towels and tape the package closed with an indicating tape.
3. Refer to the manual of the autoclave in use for proper loading techniques and correct positioning of the items to be sterilized. Sterilize at 121°C for 15 minutes.

LPMRE-PSF

Assembly/Disassembly Instructions:

The LPMRE-XXPSF series biofilm systems are precision devices consisting of two Polysulfone manifold halves with dual platinum electrodes, two Polysulfone inlet/outlet nipples, stainless steel socket head cap screws connecting the manifold halves, silicone O-rings, and 12 polysulfone biostud holders with silicone seals and stainless steel retention/ejection screws.

Assembly or disassembly of the LPMRE-12PSF devices for cleaning requires a 5/32" hex drive wrench and a #1 Phillips screwdriver.

Disassembly of the LPMRE-12PSF

1. Remove the biostud holders from the ports. If the holders are populated with biostuds, remove the biostuds from the holders by turning the pan head screws counterclockwise using a #1 Phillips screwdriver until the screws disengage, and push on the screws to partially eject the biostuds. Grasp the stems of the partially ejected biostuds with sterile forceps to remove them for analysis.
2. If desired, remove the inlet/outlet nipples from the lower manifold by turning counterclockwise with a wrench (for routine cleaning and sterilization this step is not required).
3. Place the LPMRE-device face down and use a 5/32" hex-drive wrench to remove the socket head capscrews connecting the two manifold halves.
4. Carefully separate the two Polysulfone halves and remove the silicone O-ring.
5. Wash all components using only mild detergent and water, and thoroughly rinse with deionized water. Allow to dry before reassembly.

Assembly of the LPMRE-12PSF

1. Lubricate all O-rings occasionally with silicone O-ring lube to promote sealing and prolong O-ring life. With the LPMRE base upright on a bench, place the large silicone O-ring in the groove surrounding the central channel. Align the top manifold and place it gently onto the base, being careful not to dislodge the O-ring. While holding the halves firmly together, turn the manifold over on the bench to expose the holes for the socket head cap screws. Using a 5/32" hex drive wrench, install and partially tighten the cap screws, leaving a 1mm gap between the top and base of the manifold. Then tighten the screws uniformly, still leaving a tiny gap (approximately 0.1mm) between the manifold halves. Finally, tighten them sequentially just to bring about surface-to-surface contact between the manifold halves**. DO NOT OVERTIGHTEN!** The O-ring is fully compressed and any tightening beyond surface-to-surface contact will simply stress the threads in the upper manifold, leading to cracking and structural failure.
2. If the inlet/outlet nipples were removed during cleaning, replace the O-rings in the grooves surrounding the thread and carefully screw them into the endport sockets only until surface-to-surface contact has been made to gently compress the retained O-ring. Again, **DO NOT OVERTIGHTEN** as this will simply lead to structural failure of the insert or manifold.
3. Populate the biostud holders with biostuds of the appropriate material by pushing the stem into the holder until the face is flush with the counterbored end of the holder, and secure the biostuds in the holder by tightening the retaining screws with a #1 Phillips screwdriver.
4. Plug the biostud holders into their ports by gently twisting them while pushing firmly into the holder ports at the labeled positions (A through J or A through Y).