

## Sanitizing LifeASSURE™ BNA & BDA Series Membrane Filters with Hydrogen Peroxide/Peracetic Acid Based Sanitizing Solutions

### SAFETY INFORMATION

Read, understand, and follow all safety information contained in these instructions and the instructions provided with the original filtration system, prior to installation and use. Retain for future reference.

EXPLANATION OF SIGNAL WORD CONSEQUENCES	
⚠ WARNING:	Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage.
⚠ CAUTION:	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.
<b>⚠ WARNING</b>	
To reduce the risk associated with system burst related injuries:	
<ul style="list-style-type: none"> <li>• <b>Do not</b> use if fluid pressure exceeds rating described on the pressure vessel data plate.</li> <li>• <b>Do not</b> use with fluids at temperatures exceeding the rating described on the pressure vessel data plate.</li> <li>• <b>Do not</b> use for continuous service with compressed gases.</li> </ul>	
<b>⚠ CAUTION</b>	
To reduce the risk associated with exposure to contaminants:	
<ul style="list-style-type: none"> <li>• <b>Always use appropriate personal protective equipment (PPE) when installing or servicing the filtration system.</b></li> <li>• Ensure that all system pressure has been relieved prior to opening the system to atmosphere.</li> <li>• To reduce the risk associated with eye, skin, and respiratory and digestive tract injuries from chemical cleaners/sanitizers during system maintenance:               <ul style="list-style-type: none"> <li>o Do not get chemical cleaners/sanitizers in eyes, on skin, or on clothing. Do not ingest or inhale.</li> <li>o Wear appropriate PPE including eye and face protection, protective gloves, and an appropriate NIOSH-approved filter mask.</li> </ul> </li> </ul>	

### Introduction

The recommended conditions for chemical sanitation of used membranes are: 1) a warm water flush using filtered water at 131 °F (55 °C) followed by 2) a static soak of the filter cartridges for 30 minutes in 0.5% v/v aqueous hydrogen peroxide/peracetic acid based sanitizing agent solution at ambient temperature. Laboratory tests indicate that the 3M Purification Inc. LifeASSURE™ BNA & BDA membrane is compatible with dilute solutions (up to 1.0% v/v) of hydrogen peroxide/peracetic acid based sanitation agents for up to 150 continuous hours at room temperature. Measurement of the forward flow diffusion during the tests indicated the forward flow integrity test (FFIT) values remained constant as a function of time of exposure to the sanitizing agent and remained well below the FFIT specification. No deterioration in the membrane flow characteristics as a function of the time of exposure were found.

Chemical sanitation is only effective when the hydrogen peroxide and peracetic acid can penetrate the pores. Therefore, a warm water flush is employed prior to use of the chemical sanitation agents to remove excess colloidal material from the membrane surface to expose the pores in the membrane. Warm water can only work on those pores the warm water can flow through. Once a pore is plugged, neither the chemical sanitation agent nor warm water will be completely effective in removing the colloidal materials. Therefore, warm water flushing and chemical sanitation should be practiced BEFORE the differential pressure across the membrane begins to build. Once the differential pressure rises, the pores are effectively lost and can be considered as permanently plugged.

The warm water flushing or regeneration of the membrane, followed by chemical sanitation is ideal for removing water soluble materials and oxidation by-products. These sanitation steps are usually followed by a hot water sanitation step. The typical temperature during the sanitation is 80 ° to 90 °C. At these elevated temperatures, the colloidal materials tend to “bake” in the pores and on the membrane surface causing permanent plugging of the membrane. Therefore, maximum benefit is achieved by conducting the warm flush and chemical sanitation PRIOR to the hot water sanitation step.

## Procedure:

*Warning: Exercise caution when working with oxidizing agent solutions. Wear and use appropriate personal protection equipment: clothing, gloves, face/eye protection (safety glasses, goggles, or full face shield) at all times.*

1. At the end of the daily filtration run, push residual product out of the housing and cartridges with ambient temperature filtered water, air or CO<sub>2</sub>.
2. Flow 131 °F (55 °C) filtered water through the filters to drain for 15 minutes at the same flow rate used to filter the product.
3. If filters are in series, it is recommended that the first filter be flushed to drain with warm water for 15 minutes before diverting the flow through the second filter.
4. Allow the housing to return to ambient temperature. (Flowing cold, filtered water through the filters will shorten the time required to cool the housing and filters.)
5. Slowly add the 0.5% v/v hydrogen peroxide/peracetic acid sanitizing solution and fill the housing.
6. Allow the hydrogen peroxide/peracetic acid solution to remain in contact with the filters for 30 minutes.
7. Flush the sanitizing solution from the housing by flowing ambient temperature filtered water to drain for 15 minutes at a flow rate of up to 3 gpm per 10" filter element not to exceed 35 psid.
8. If desired, flow 176 °F (80 °C) filtered water through the filters to drain for 30 minutes at the same flow rate as used to filter the product.
9. Allow the housing to cool to ambient temperature. (Flowing cold, filtered water through the filters will shorten the time required to cool the housing and filters.)
10. Integrity test the filters before the next production run.

The five most common sanitizing agents (the manufacturer) used in this application are:

Recommended Grades	Active Components		
Oxygal NEP (CFPI)	15% hydrogen peroxide	2.5% peracetic acid	
Oxonia Active® (EcoLab, Inc.)	27.5% hydrogen peroxide	5.8% peracetic acid	
Divosan® Mezzo (Diversey, Inc.)	22% hydrogen peroxide	2.5% peracetic acid	8% nitric acid
Divosan® Plus (Diversey, Inc.)	15% hydrogen peroxide	5% peracetic acid	
Divosan® Forte (Diversey, Inc.)	26% hydrogen peroxide	15% peracetic acid	

### Important Notice:

The test results described in this literature are accurate to the best of our knowledge. A variety of factors, however, can affect the performance of a the product(s) in a particular application, some of which are uniquely within your knowledge and control. **INFORMATION IS SUPPLIED UPON THE CONDITION THAT THE PERSONS RECEIVING THE SAME WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR USE. IN NO EVENT WILL 3M BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON INFORMATION.**

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