

## Cleaning LifeASSURE™ BDA020 & BNA020 Series Membrane Filter Cartridges with Caustic 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

<b>⚠ WARNING:</b>	Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury and/or property damage.
<b>⚠ CAUTION:</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage.

#### **⚠ WARNING**

To reduce the risk associated with system burst related injuries:

- **Do not use if fluid pressure exceeds rating described on the pressure vessel data plate.**
- **Do not use with fluids at temperatures exceeding the rating described on the pressure vessel data plate.**
- **Do not use for continuous service with compressed gases.**

#### **⚠ CAUTION**

To reduce the risk associated with exposure to contaminants:

- **Always use appropriate personal protective equipment (PPE) when installing or servicing the filtration system.**
- Ensure that all system pressure has been relieved prior to opening the system to atmosphere.
- To reduce the risk associated with eye, skin, and respiratory and digestive tract injuries from chemical cleaners/sanitizers during system maintenance:
  - o Do not get chemical cleaners/sanitizers in eyes, on skin, or on clothing. Do not ingest or inhale.
  - o Wear appropriate PPE including eye and face protection, protective gloves, and an appropriate NIOSH-approved filter mask.

### Introduction

In malt or fruit based beverage applications where pre-filtration is used prior to the final membrane filter cartridges, the final membrane filter cartridges tend to plug by gradual constriction of the pores with deformable colloidal substances, not by the collection of particulate or microorganisms on the membrane surface. The colloidal substances are composed of various naturally occurring organic materials that include beta-glucans, proteins and tannins. These components are inherent in the malt or fruit, or are generated in upstream processes such as fermentation and the enzymatic breakdown of carbohydrates and other compounds.

Regular flushing of the filter cartridge with warm 131 °F (55 °C) water can reduce this build up, remove the layer of these materials on the membrane surface, flush them from the filter cartridge matrix and increase the filter cartridge's service life (refer to 3M Purification Inc. Technical Brief, 70-0202-5340-0. However, flushing with a dilute caustic solution will further reduce colloidal build-up.

This procedure has been found to work best with beer or malt based beverages. As an example, in the filtration of beer, laboratory studies show a 25% minimum filter cartridge service life increase when using a warm water flush in conjunction with a mild alkaline flush as opposed to the warm water flush alone. For best results, it is essential to clean the filter cartridges before the process flow differential pressure exceeds 10 psid (689 mbar). The recommended alkaline solution is 2-3% NaOH at a maximum of 140 °F (60 °C). **Always use filtered water to make the solution.**

### Procedure:

1. At the end of a standard filtration cycle, flush the filter cartridge with warm 131 °F (55 °C) filtered water as described in 3M Purification Inc. Technical Brief, 70-0202-5340-0. Flush until filtrate appears clear.
2. Drain the housing and close the inlet and outlet housing valves.
3. Open the upstream housing bleed valve.

4. Slowly open the caustic solution valve at the inlet to the housing.
5. Slowly add the caustic solution to fill the housing.
6. As the caustic solution emerges, close the upstream housing bleed valve and slowly open the downstream housing valve.
7. Flush the caustic solution through the system for 15 minutes at a flow rate at least as fast as the beverage itself (typically 1-2 gpm [4-8 lpm] per 10" filter cartridge). Faster flows will access more pores but do not exceed 50 psid (3.44 bar) per 10" filter cartridge.
8. Stop the flow of caustic solution and flush the housing with filtered ambient temperature ½% to 1% citric acid solution to neutralize any residual alkaline solution in the housing.
9. Stop the flow of citric acid solution and flush the housing with filtered ambient temperature water to remove the residual citric acid solution.
10. Integrity test the filter cartridge(s) before the next use.



**3M Purification Inc. Filter Systems Designed for Beverage Filtration**

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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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