



# Bactisure™ Wound Lavage

Advancing Biofilm Removal



## Bactisure Wound Lavage

Bactisure Wound Lavage is used with the Zimmer Pulsavac® Plus or Pulsavac Plus AC Wound Debridement Systems, and is indicated for use in cleansing and removal of debris, including micro organisms, from wounds. Ingredients include ethanol (solvent), acetic acid (pH modifier), sodium acetate (buffer), benzalkonium chloride (surfactant), and purified water. Bactisure Wound Lavage is supplied in a 1000 ml single-dose flexible plastic container/bag with an integrated single spike port.



### A New Approach to Biofilm Removal

Bacteria can produce Extracellular Polymeric Substance (EPS) to shield themselves from both mechanical and chemical attack. Bactisure Wound Lavage was specifically designed to remove these structurally resistant forms of bacteria. Our solution physically deconstructs the protective EPS matrix, making bacteria more susceptible to traditional antibiotics and the body's normal defense mechanisms. **Indicated for Use on All Wound Types.**

### Key Application Steps

- Apply just prior to wound closure using Zimmer Biomet Pulsavac Plus pulsed lavage system.
- Immediately after irrigating the wound bed, the wound bed **MUST BE** rinsed away with an equal amount of normal saline.

### Does Not Harm Human Tissue\*

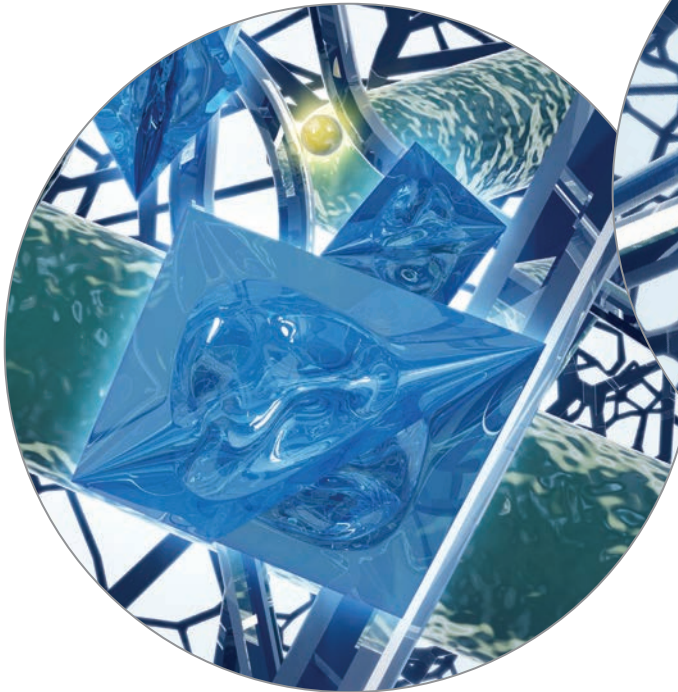
- **Safe for use** – NAMSA Toxicology Report<sup>1</sup>
- **Non-irritant** – ISO Intramuscular Implantation Test with Histopathology.<sup>2</sup> Rabbit exposure testing on cartilage, brain, and mesentery tissues<sup>22</sup>
- **Normal wound healing** – Porcine Dermal Testing<sup>3</sup>

### Contraindications

- Do not use if there is a history of allergy to any of the ingredients.
- Due to the ethanol content, do not use this product on neonates or infants (children under the age of 2).
- For a full list of indications, contraindications, and warnings, see the product manual.

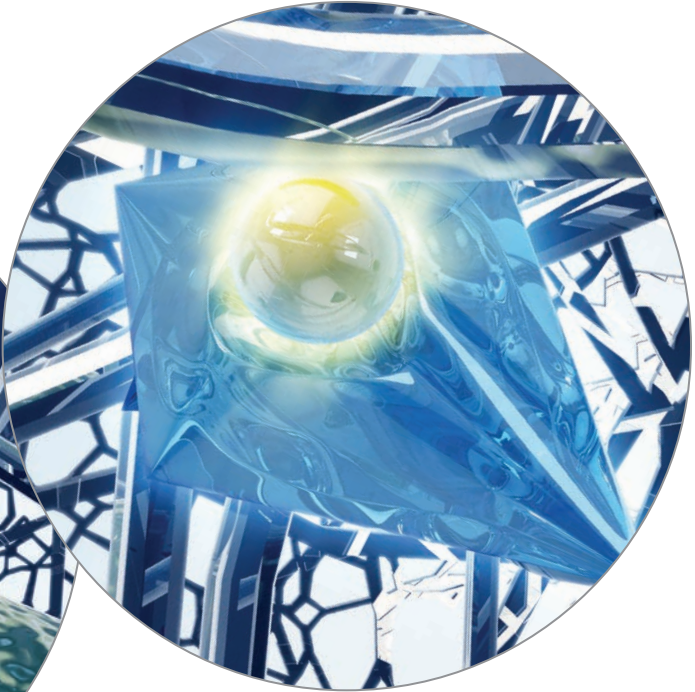
\* When used as labeled.

## Deconstructs and Removes



### Deconstructs

Bactisure Wound Lavage breaks up crosslinks within biofilm EPS.<sup>4</sup>



### Removes

With EPS crosslinks removed, Bactisure Wound Lavage solubilizes biofilms for easy removal via pulsed lavage. Exposed bacteria are subject to lavage removal or inactivation via traditional antibiotics and the body's normal defense mechanisms.<sup>5</sup>

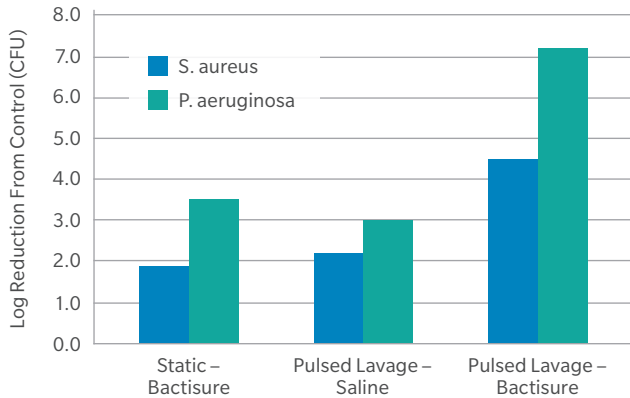
## Biofilm's Role in Chronic Wound Infections

- Over 90% of all bacteria exist in biofilms.<sup>6,7</sup>
- Biofilms are formed in the body when bacteria coalesce on surface structures and produce an Extracellular Polymeric Substance (EPS).<sup>6,7</sup>
- The EPS then shields bacteria from both mechanical and chemical attack.<sup>6,7</sup>
- EPS shielded bacteria in a biofilm can be 1000x more resistant to antibiotics than planktonic (free-floating) bacteria.<sup>6,7</sup>
- The periodic release of planktonic bacteria from biofilms have been linked to chronic relapsing infections.<sup>8</sup>

## Focused on Patient Outcomes

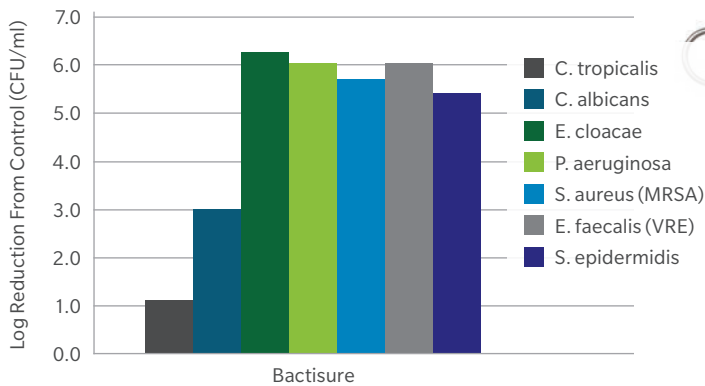
**Figure 1 – Mature Biofilm/EPS Removal: Static vs. Pulsed Lavage Performance<sup>5</sup>**

2-Min. Static and 30-Sec. Pulsed Lavage, Titanium Substrate



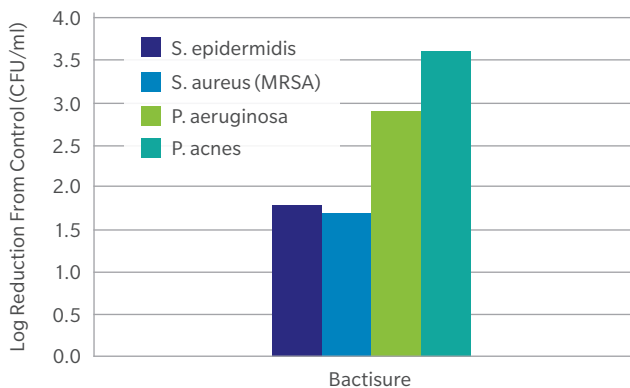
**Figure 2 – In Vitro Removal of Contaminants<sup>10</sup>**

30 Second Suspension Time



**Figure 3 – Mature Biofilm/EPS Removal<sup>4</sup>**

2-Min. Static - Stainless Steel Substrate



## Enhancing Wound Care

Irrigation and debridement are considered essential components of wound management and infection control.<sup>9</sup>

Laboratory testing suggests that Bactisure Wound Lavage can enhance these standard wound care practices when used as an adjunct to normal saline wound lavage<sup>†</sup>. The reduction of two common Bacteria is increased by several logs when Bactisure was combined with pulsed lavage compared to static lavage<sup>5</sup> (see Figure 1).

Moreover, laboratory testing suggests that Bactisure Wound Lavage can effectively remove common wound pathogens including the bacteria found in biofilms<sup>4,10</sup> (see Figures 2 and 3). Bactisure Wound Lavage also conforms to USP <51> Antimicrobial Effectiveness Testing requirements for rapid in-solution inactivation of common pathogens.<sup>11,12,13</sup>



<sup>†</sup>Laboratory testing is not necessarily indicative of clinical results.

# Periprosthetic Joint Infection - A Serious Complication

Periprosthetic Joint Infection (PJI) is one of the most common and devastating complications after total joint replacement.<sup>15,16</sup> It is the main cause for a hip or knee revision, posing a significant burden to the overall health care system and therefore considered the largest challenge in orthopaedics today.<sup>15-21</sup>

Managing PJI begins with a proper analysis of risk factors. Whether evaluating a patient for potential infection prior to surgery, or working towards a definitive diagnosis after surgery, Zimmer Biomet seeks to expand the offering of reliable and cost-effective tools to support infection management throughout the full continuum of care.



## Prevention

Combining a variety of preventative measures can aid in decreasing the risk of infection. A plan for prevention should be multidimensional and take into account inherent patient risk factors, environmental factors and the infecting organism.

## Diagnostics

Diagnosis of PJI continues to be a major challenge in clinical practice, especially in late and delayed infections. Accurate, reliable and rapid diagnostic tools enable surgeons to make informed decisions and establish the appropriate treatment plan.<sup>15,22</sup>

## Therapy

Once an infection has been diagnosed, common surgical therapies include debridement, thorough wound lavage potentially combined with an additive solution, systemic antibiotic therapy and implant revision. Providing a diverse array of therapeutic technologies is critical to helping surgeons accommodate unique patient needs.

## Re-implantation

Re-establishing the mechanical function of a joint once the infection is healed requires matching unique patient anatomy with precise implant selection. An expansive implant portfolio with innovative designs is important to a positive patient outcome.



## Ordering Information

### Bactisure Product



Bactisure Wound Lavage, 1000 ml.	6/Box	00-8887-002-00
Dual Spike Y-Connector Set	10/Box	00-5150-042-00

### Pulsavac Plus Kits



Pulsavac Plus Component Kit	1/Box	00-5150-420-01
Pulsavac Plus Fan Kit	1/Box	00-5150-475-01
Pulsavac Plus Hip Kit	1/Box	00-5150-482-01
Pulsavac Plus Shower Kit	1/Box	00-5150-495-01

### Bactisure Pulsavac Plus A/C Kits



Pulsavac Plus AC Component Kit	1/Box	00-5150-426-01
Pulsavac Plus AC Fan Spray Kit	1/Box	00-5150-476-01
Pulsavac Plus AC Hip Kit	1/Box	00-5150-486-01
Pulsavac Plus AC Shower Spray Kit	1/Box	00-5150-496-01

### References

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- ISO Intracutaneous Reactivity Testing, WuXi AppTec report #9107015-5, per ISO 10993-10.
- Porcine Dermal Full-Thickness Wound Wash Study, WuXi AppTec report 32255.
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- Next Science report WuXi – 177201 Jul 2019, internal data

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