

BoviBrom®: Highly Effective, Broad-spectrum, Post-harvest Antimicrobial

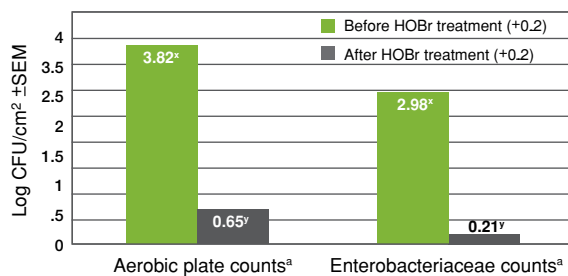
BoviBrom® (DBDMH) nuggets dissolve in water to form hypobromous acid (HOBr), an antimicrobial that can be applied to red meat proteins to reduce the levels of harmful foodborne pathogens.

Benefits

EFFICACY

BoviBrom has been proven effective in multiple research studies as a broad-spectrum, post-harvest antimicrobial (≤ 900 ppm) that reduces levels of *Salmonella*^{1,2} and *E. coli* O157:H7,^{1,2} O26, O45, O103, O111, O121 and O145.²

Table 1. Log reductions of aerobic plate counts, Enterobacteriaceae, with BoviBrom solution³



³Un-inoculated, pooled data from 3 days of samples from beef carcasses at a commercial beef plant before and after BoviBrom solution cabinets

^{*}Means with different superscripts within data set are different

VERSATILITY

- Proven effective in multiple interventions such as a hide, pre-evisceration, carcass, head wash⁴ and spray chill⁴
- Approved for use on beef, pork, goats and lamb carcasses
- Easily configured with many existing spray cabinets and spray chill systems*

- Can be used in a wide range of concentrations, pressures, temperatures and volumes
- Equally effective in cold and warm water²

UNIQUE APPLICATION SYSTEM

- Supports multiple application points, delivery of different concentrations and at the pressure/flow appropriate for each cabinet
- No mixing and minimal application equipment monitoring required
- Free-flowing solid nuggets dissolve into a consistent HOBr solution in most water temperature ranges
- Available in manual and PLC-controlled configurations with optional in-line HOBr measurements (ppm)
- Nuggets come packaged in 50 lb pail or 365 kg (800 lb) SuperSak

PRODUCT HANDLING & SAFETY

The diluted BoviBrom solution:

- Forms a near-neutral pH solution with a subtle, non-offensive halogen odor
- Requires no chemical mixing or activation
- Does not require ventilation at the point of application^{5,6}
- Safe for surrounding workers as demonstrated by industrial hygiene reports⁷
- May be recycled to upstream applications or safely discharged to wastewater treatment facilities⁸

NON-CORROSIVE⁹⁻¹¹

At recommended concentrations, the BoviBrom HOBr solution is:

- Compatible with concrete, stainless steel, PVC and other common construction materials
- Suitable for use in spray chill environments, with no deleterious impact on floors, valves or cooling units



BoviBrom Transit Application System™



New, automated, closed-loop BoviBrom Convoy Elite Application System™ now available!

For questions or to learn more about the Passport Food Safety Solutions product portfolio, call 515-334-8035 or visit www.passportfoodsafety.com.

Always read and follow label instructions, including directions for use, warnings and cautions.

The sales and delivery of Passport Food Safety Solutions food safety products will be expressly governed by and subject to the limited product warranty and other terms and conditions of sale available at www.PassportFoodSafety.com.

*When used according to label. The BoviBrom label contains safety information for the concentrated nugget form of BoviBrom.

¹Kalachayanand, N., T. Arthur, J. Bosilevac, et al. 2009. "Effectiveness of 1,3-Dibromo-5,5 Dimethylhydantoin on Reduction of *Escherichia coli* O157:H7 – and Salmonella – Inoculated Fresh Meat" J. Food Prot. 72(1):151-156.

²Pittman, C.I., I. Geomaras, D.R. Woerner, K.K. Nightingale, J.N. Sofos, L.D. Goodridge & K.E. Belk 2011. Assessment of BoviBrom Against *Escherichia coli* on Beef Carcass Tissue.

³Yang, X., C.I. Pittman, C.C. Penham, D.R. Woerner, I. Geomaras, & K.E. Belk. 2013. "Efficacy of BoviBrom Using Surrogates in a Bone Wash Cabinet – Data Summary." Elanco Study No. F1SUS130001. Data on file.

⁴Customer validation.

⁵Ricks, G.M. Albemarle Industrial Hygiene Report – Sept 25, 2009. Data on file.

⁶Ricks, G.M. Albemarle Industrial Hygiene Report – Dec 2, 2009. Data on file.

⁷Albemarle Corporation. "Air monitoring – BoviBrom in Beef Processing Facilities." Unpublished. Data on file.

⁸Subject to local regulatory jurisdiction.

⁹Liimatta, E. 2010. "Degradation Testing of Concrete." Data on file.

¹⁰Liimatta, E. 2010. "Corrosion Testing of Black Steel." Data on file.

¹¹Albemarle Corporation. 2009. "BoviBrom Advantage: Less Corrosive to Plant and Equipment." Unpublished. Data on file.

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