The STRAINRITE Companies World Class Filtration

WHITE PAPER

A DEEP-DIVE INTO LIQUID FILTRATION FOR FOOD & BEVERAGE MANUFACTURING

This white paper examines how Strainrite's technologies mitigate contamination risks, enhance process reliability, and align with evolving industry demands.

EXECUTIVE SUMMARY

In the food and beverage industry, filtration is a linchpin of product safety, quality, and regulatory adherence. Strainrite addresses these imperatives with its Bev-MAXX pleated membrane filters and Poly-MAXX depth cartridges, engineered to deliver microbial control, product clarity, and operational efficiency. Our solutions, manufactured to GMP and ISO standards, utilize FDA compliant materials and validated designs to help end-users achieve batch-to-batch consistency and meet global standards such as FSMA within their own validated processes.

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THE CRITICAL ROLE OF FILTRATION IN FOOD & BEVERAGE PRODUCTION

Filtration systems are indispensable across production stages, serving three core functions:

01 MICROBIAL CONTROL

Filtration acts as a critical control point (CCP) to eliminate bacteria, yeast, and spoilage organisms, extending shelf life and preventing recalls. In beverage applications, absolute-rated polyethersulfone filters like Bev-MAXX ensure sterility without compromising nutritional integrity.

02 PRODUCT CLARITY

Removing particulates, sediments, and haze-causing agents is essential for beverages such as wine, beer, and bottled water. Consistent filtration prevents off-flavors and maintains visual appeal, directly impacting consumer satisfaction.

03 REGULATORY COMPLIANCE

All Strainrite filter materials adhere to FDA Title 21 CFR, manufactured to GMP and ISO standards helping manufacturers meet international regulatory compliance, like FSMA. Filtration systems must validate their ability to eliminate biological, chemical, and physical hazards while using food-safe materials.

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STRAINRITE'S ADVANCED FILTRATION SOLUTIONS

BEV-MAXX PLEATED MEMBRANE FILTERS

Key Features:

Absolute Microbial Barrier: An asymmetric polyethersulfone (PES) membrane are tested and validated to block bacteria and yeast, to meet the microbiological performance below (as log reduction value - LRV):

Microorganism	BVMO.2	BVMO.45	BVMO.65
Oenococcus oeni		LRV $\geq$ 12	
Lactobacillus hilgardii		LRV $\geq$ 12	
Saccharomyces cerevisiae		LRV $\geq$ 12	LRV $\geq$ 12
Brevundimonas diminuta	LRV $\geq$ 12		

Integrity Testing: Each filter is flushed with high-purity water and tested to correlate bubble point thresholds with microbial retention.

Regulatory Compliance: Materials meet FDA Title 21 CFR 177-182 and USP Class VI standards for food contact.

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STRAINRITE'S ADVANCED FILTRATION SOLUTIONS

POLY-MAXX DEPTH CARTRIDGES

Key Features:

High Efficiency: Constructed from 100% polypropylene microfiber for capturing particulates (.25–70 µm absolute or nominally rated).

Optimized Pleat Design: Maximized pleat design for greater surface area, ensuring longer service life, fewer changeouts and reduced processing times. Optional added pleat increases surface area by 25%, reducing changeouts and operational costs.

Thermal Stability: Thermally bonded construction eliminates particle bypass.

Regulatory Compliance: Meets FDA Title 21 and USP Class VI requirements for food contact.

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REGULATORY COMPLIANCE AND QUALITY ASSURANCE

ALIGNMENT WITH GLOBAL STANDARDS

FDA Title 21 CFR: Bev-MAXX and Poly-MAXX materials are certified for repeated food contact, eliminating risks of chemical leaching.

ISO 9001 & cGMP: Manufactured in ISO-certified facilities with stringent quality controls, ensuring traceability and batch consistency.

DOCUMENTATION AND VALIDATION

Integrity Test Records: Bev-MAXX filters include certificates verifying microbial retention thresholds. We could provide documents for our cartridges: **Certificate of Quality, Certificate of Assurance, Certificate of Performance.**

ENHANCING OPERATIONAL EFFICIENCY AND CONSISTENCY

BATCH-TO-BATCH CONSISTENCY

Bev-MAXX: Robust pleat support and 316 stainless steel cores ensure reliable performance across multiple sterilization cycles, critical for food & beverage production. Poly-MAXX: Uniform media density designed for achieving repeatable effluent quality filtration, reducing variability in wine and juice clarification.

EXTENDED SERVICE LIFE

Bev-MAXX filters endures many cycles, resulting in decrease in purchasing frequency

HIGHER THROUGHPUT

Poly-MAXX's pleat design increases flow rates, minimizing downtime during high-volume runs

SCALABILITY:

All Strainrite cartridges enable pilot-to-production scaling for seamless process development.

CONCLUSION:

Strainrite's Bev-MAXX and Poly-MAXX filters redefine filtration excellence in food and beverage manufacturing. By combining absolute microbial control, regulatory compliance, and operational efficiency, these solutions empower producers to deliver safe, high-quality products while optimizing costs. As industry demands intensify, Strainrite remains committed to innovation, ensuring clients stay ahead in a competitive market.