QMI NEWSLETTER

QMI is committed to providing the highest quality sampling products available on the market today !

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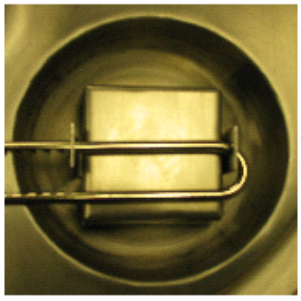
QMI® Introduces Prototype Tamper-Resistance Device

QMI has been manufacturing the QMI® Aseptic Sampling System since 1983. Since that time, we've introduced the QMI® Safe-Septum and the QMI® Aseptic Transfer System. Our products have been accepted worldwide and they are presently being used in 28 countries. We are marketing them to a wide variety of industries including the dairy processing, dairy farm, pharmaceutical, biotechnology, beverage, brewing and other industries that have a need to sample liquid processes. Our products have proven to be valuable tools for many QA/QC programs such as HACCP systems.

Thus far our products have been used in facilities that are maintained and controlled by production, management, QA/QC and other personnel. Recently several of our customers have expressed interest in using QMI products in isolated areas such as on over-the-road tankers, isolated piping systems and other less frequently monitored areas. Under these conditions, unwanted injections or product removal could be a concern. To reduce the risk of tampering or unwanted removal of product, QMI has developed a prototype tamper-resistant device. This device locks the nut into place covering the Aseptic Sampler completely. Samples cannot be taken, nor can injections be made, unless the device is removed.

QMI is interested in feedback from our customers in order to gauge the need for this device. If you are interested in learning more about this product, please contact QMI by phone, e-mail or fax.



QMI® Mission Statement

Since 1983, QMI's mission has been to provide an aseptic, user-friendly, cost effective method of sampling liquid processes. Because microbiological tests are only as accurate as the sample, our mission is to provide the most accurate and aseptic liquid sampling & transfer devices available today.

QMI Promotes an Effective Method of Post-Pasteurization Contamination Monitoring

Research has shown that the QMI Composite Sampling Bag is User-Friendly

One of the primary causes of dairy product quality defects is post-pasteurization contamination (PPC) with gram-negative psychrotrophic bacteria. In recent years research has shown that the level of post-pasteurization contamination of gram-negative bacteria in pasteurized milk can be extremely low. This research showed that contamination rates as low as one bacteria per liter can cause spoilage and other product defects in a short time if the growth rate of that bacteria is extremely fast. Other research has shown that the growth rate is dependent on storage temperature and oxygen concentrations of the milk.

For example, it is possible for a gram-negative bacteria to cause quality defects at 7°C (45°F) in as little as 10 days under ideal growth conditions of saturated oxygen in milk.

To effectively monitor dairy processes for the potential of contamination of the gram-negative psychrotrophic bacteria or to identify sources of contamination it is important to use effective process monitoring procedures. Effective process monitoring requires:

1. Aseptic sample collection,
2. Collection of large sample volumes (50-500 ml),
3. Oxygen concentration that is similar to the oxygen concentration in the stored product,
4. Incubation time sufficient to allow for low level contaminant to reach a level that can be counted using standard laboratory procedures, and
5. Laboratory procedures that are sensitive for detecting psychrotrophic bacteria (spoilage bacteria).

A procedure that has worked for identifying post-pasteurization contamination is sampling with the QMI® Aseptic Sampling System and using the QMI Composite Sampling Bag. The sample is then incubated for 7 days at 45 F and a SPC conducted (Mosely Keeping Quality Test). The sample is then held at 45 F until the end of code and another SPC conducted.

Psychrotrophic Bacteria

Validation Studies have proven that the QMI® Aseptic Sampling System will prevent contamination of both the sample and the product during sampling. In addition, the QMI Composite Sampling Bag has proven to be a method of obtaining large samples aseptically (2 Liter and 5 Liter samples). An added feature of the QMI Composite Sampling Bag is that is has oxygen permeability that will allow the gram-negative bacteria to grow in the same fashion as they would in product storage containers. In other words, with the QMI Composite Sampling Bag, there is no need to add additional air or oxygen to a sample to promote the same growth rate of the contaminate as there would be in a product that has been fully oxygen saturated through pumping, agitating and filling procedures.

To illustrate the oxygen permeability of the QMI Composite Sampling Bag a study was conducted at the University of Minnesota's Biological Technology Institute. In this study, sterilized milk was inoculated with a pseudomonas bacteria at a population of about 60 organisms per liter. The inoculated milk was filled in the three composite bags and three 60cc syringes and then incubated in the refrigerator at 7° (45F). Bags and syringes containing uninoculated milk served as controls. In the inoculated composite bags, the presence of the bacteria was clearly evident within 6 days (table 1). By contrast, the inoculated syringes required 21 days to definitively confirm the presence of bacteria. The faster results obtained with the composite bags seem to be due to the better oxygen permeability of the bags.

Table 1: Daily cell counts (cfu/ml)

	Day 0	3	6	7	8	9	10	13	15	21
Control bag 1	<1	<1	<1	<1	<1	<1	<1	<1		<1
Control bag 2	<1	<1	<1	<1	<1	<1	<1	<1		<1
Bag 1	<1	1	15	80	169	334	750	$2.2x10^6$		$6.5x10^7$
Bag 2	<1	1	15	70	110	200	350	$1.0x10^6$		$10.5x10^7$
Bag 3	<1	2.5	13	70	29	100	600	$1.7x10^6$		$6.0x10^7$
Control Syr 1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Control Syr 2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Syr 1	<1	<1	<1	<1	<1	3	4	3	<1	21.5
Syr 2	<1	<1	<1	<1	<1	2	<1	<1	<1	3.5
Syr 3	<1	1	<1	1	<1	5	2	1	<1	193

To learn more about this study or other methods of monitoring Post-Pasteurization Contamination, please contact QMI.

Good News for Dairy Farmers !

The FDA has approved the QMI In-Line Sampler as a sampling method for use in the NCIMS program for New York State. Use of the QMI Sampler will fulfill two needs for the dairy farms. First, many dairy farmers are loading milk after being harvested directly to milk hauler trucks. These dairy farms need a way of obtaining a representative milk sample that can be used for regulatory purposes. Second, many farmers are installing new type horizontal/vertical tanks or silos that have a need for an aseptic sampling system.

A study was conducted by the New York Ag and Mkts, Division of Milk Control, Albany, NY and Milk Industry Leading Konsultants, Inc. (M-I-L-K, Inc.), Horseheads, NY. This study compared test results using the QMI Sampler vs. conventional sampling procedures. Tests conducted in this study include the SPC, ESCC and GI. Results from this study allowed the FDA to approve the QMI Sampler as an alternative sampling method. The study was conducted by Mr. Tom Angstadt (Dairylea, Director of Technical Services) and Mr. Robert Manning from M-I-L-K, Inc.

These researchers pointed out that using the QMI System to obtain universal samples from dairy farms has several advantages including the ease of retrofit, protection from contamination of sample (which assure quality bonuses), 3-A certified, cost effectiveness and its ease of use.

While the FDA has placed a two year approval for use of the QMI Sampler. A protocol will be developed along with additional testing in anticipation of national approval.

Marc von Keitz, PhD.
Program Director
Biotechnology Services

U of M Biotechnology Resource Center

The University of Minnesota's Biotechnology Resource Center is one of the corner stones of Biodale, a coalition of biotechnology service facilities that are co-located in Gortner Laboratory and Snyder Hall on the St. Paul campus. These service facilities were conceived to accelerate the research and development process for University and industrial scientists by combining the most sophisticated equipment with a staff of dedicated and highly trained experts.

The Biotechnology Resource Center is staffed by a team of six highly experienced scientists: a microbiologist, a biochemist, a biochemical engineer, two molecular biologists, and a fermentation technician, plus several student lab attendants. This broad-based expertise enables the Biotechnology Resource Center to offer services in the areas of microbial testing, strain development, fermentation, protein expression, and protein purification, as well as a broad range of molecular biology techniques. The core equipment includes 13 fermentors ranging in volume from 5 L to 300-L each being connected to state-of-the-art computer control and data acquisition systems. In addition, the Biotechnology Resource center is equipped with a wide range of downstream processing units, as well as sophisticated analytical instruments.

For QMI, the Biotechnology Resource Center has conducted extensive microbial challenge tests to verify the reliable performance of the Safe-Septum sampling ports. A recent study also demonstrated the accelerated detection of gram-negative milk spoilage organisms through the use of QMI® sampling bags. For more information visit the website: http://www.bti.umn.edu/brc or contact Dr. Marc von Keitz directly (ph: 612-624-6758, e-mail: vonkeitz@cbs.umn.edu).

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