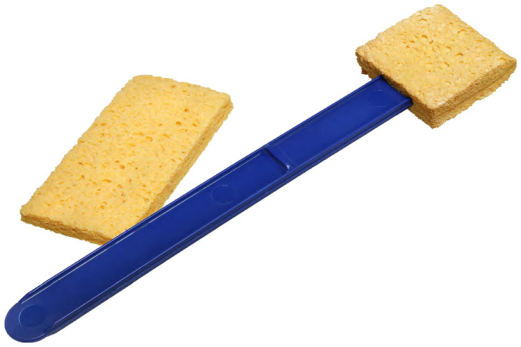
3M Science. Applied to Life.™

3M™ Sponge Stick and 3M™ Hydrated Sponge

How 3M meets your organization's sample collection needs.



Quality

- Lot-to-lot quality release testing
- Certificate of Analysis available for every lot
- Continuous improvement to exceed 3M technical standards

Consistency

- Process controlled manufacturing
- Robust supplier standards and controls

Global coverage and support

- Supply chain—climate controlled products
- Technical support
- Global coverage with local support

USDA-FSIS

- Validated 3M Sponges for food contact and environmental swab samples (FSIS Directive 3/28/13)

Key Considerations	Facts
Removal of bacterial contaminants from the surface The release of these bacteria from the swab/sponge for quantitative measure Subsequent cultivation	Cellulose and Polyurethane sponges are proven to be equivalent for sampling environmental surfaces*+.
Free of biocides	Biocide-free cellulose sponge maintains viability for wide range of organisms. *Listeria* can be maintained for 72 hours of refrigeration*.
Toxicity and environmental friendliness	Cellulose sponges are made from renewable biomass Polyurethane sponges are made from reaction of polyols, diisocyanates, catalysts, and additives.
Strength and durability	3M sponges made with cellulose are tested for withstanding scrubbing on multiple surfaces*.
Batch to batch consistency	3M sponges made with cellulose raw materials are sorted during inspection process so that the chemical and mechanical properties of the cellulose sponges are consistent from batch to batch*.
Ambient storage temperature	• Letheen is stable at ambient storage temperature for up to 2 months*. • NB is stable at ambient storage temperature*.

*Internal 3M data
+External data

Cellulose and Polyurethane sponges are proven to be equivalent for sampling environmental surfaces.

Key Considerations

- The effectiveness of the swabbing technique depends on the efficacy of these three individual components:
  - The removal of bacterial contaminants from the surface
  - The release of these bacteria from the swab/sponge for quantitative measurements
  - Their subsequent cultivation
- To optimize the potential for consistent, accurate laboratory results all batches of sponges should be tested for sterility and efficacy to ensure every product is of consistent quality.
- The guidelines in the Microbiology Laboratory Guidebook (MLG) of USDA and Bacteriological Analytical Manual (BAM) of FDA specifies sponge composition to be non-bactericidal, cellulose or polyurethane as necessary for environmental sampling [1,2].
  - Cellulose sponges are manufactured using natural ingredients, cellulose derived from wood pulp, sodium sulphate and hemp fibers.
  - Polyurethane sponges are made by reacting a polyol, a type of complex alcohol, with diisocyanate in the presence of suitable catalysts and additives.

Publications

Recent scientific publications by FDA and academia evaluate sponge performances and demonstrate outcomes consistent with 3M internal studies:

1. Sheth, I., *et.al.* (2018) Comparison of three enrichment schemes for the detection of low levels of desiccation-stressed Listeria spp. from select environmental surfaces. *Food Control, 84;* 493-498
   - FDA results showed no statistically significant difference on swabbing *Listeria spp.* from stainless steel surface between sponges made from cellulose (SSL100, 3M) and polyurethane (EZ-10DE-PUR, World Bioproducts).
2. Keeratipibul, S., *et.al.* (2017) Effect of swabbing techniques on the efficiency of bacterial recovery from food contact surfaces. *Food Control, 77;* 139-144
   - Cellulose sponge and polyurethane (PU) foam swabs provided a greater swab efficiency on biofilm recovery among different surface types and microorganisms.
   - Statistically significant high values of biofilm swabbing efficiency are in bold.
3. Internal 3M studies demonstrate that cellulose and polyurethane sponges do not show statistically significant differences in their pick up and release efficiencies from stainless steel surface.

Table 3: Number of positive samples by each sponge sampler material (Manufacturer) after sampling

Sponges material	Cellulose (3M)	Cellulose (Nasco)	Polyurethane (Worldbioproduct)
Positive control (5)	5	5	5
Negative control (5)	0	0	0
Samples (20)	10	8	13

Table 2: Biofilm swab efficiency of each swab type.

		Biofilm Swab Efficiency* of Each Swab Type			
Bacteria	**Surface Type**	**Cotton**	**Gauze**	**PU Foam**	**Cellulose Sponge**
E.coli	Stainless	47.8 ± 0.8c	***51.4 ± 0.7a***	48.3 ± 0.4b,c	***51.3 ± 0.1a***
	New PSU	50.1 ± 0.7c	***52.0 ± 0.6ab***	***52.6 ± 0.9a***	51.0 ± 1.1bc
	Old PSU	49.7 ± 0.5b	49.6 ± 1.0ab	49.7 ± 1.0ab	***50.0 ± 0.8a***
S. aureus	Stainless	49.4 ± 0.2d	54.2 ± 0.7b	53.4 ± 0.1c	***55.0 ± 0.6a***
	New PSU	48.9 ± 0.2d	***52.6 ± 0.5ab***	51.3 ± 0.2c	***53.6 ± 0.1a***
	Old PSU	47.5 ± 0.1d	52.0 ± 0.1d	50.5 ± 0.2c	***52.8 ± 0.3a***
S. Typhimurium	Stainless	46.7 ± 0.7c	47.0 ± 0.7bc	***50.0 ± 0.4a***	***48.5 ± 0.3ab***
	New PSU	46.2 ± 0.7d	51.9 ± 1.7b	***55.2 ± 0.1a***	51.6 ± 1.7bc
	Old PSU	45.1 ± 0.4c	44.9 ± 1.0c	***49.3 ± 0.7a***	47.7 ± 2.0b
L. monocytogenes	Stainless	48.2 ± 0.1c	50.0 ± 0.2b	50.2 ± 0.0b	***51.0 ± 0.1a***
	New PSU	47.8 ± 0.1c	***52.5 ± 0.3a***	50.8 ± 0.1b	***52.9 ± 0.1a***
	Old PSU	48.2 ± 0.1c	49.8 ± 0.2b	50.4 ± 0.1b	***51.7 ± 0.1a***
Total Average		48.0	50.7	51.0	51.4

*Data are means ± SD for three determinations. Means in the same row with no letters in common are significantly different (P<0.05).

1. Microbiology Laboratory Guidebook. 8.10. Isolation and Identification of Listeria monocytogenes from Red Meat, Poultry and Egg Products, Ready- To-Eat Siluriformes (Fish) and Environmental Samples. Revision 10. (2017).

2. Bacteriological Analytical Manual, Chapter 10. Detection and Enumeration of Listeria monocytogenes in Foods. (2015). U.S Food and Drug Administration.

3M Food Safety
3M Center, Building 275-5W-05
St. Paul, MN 55144-1000 USA

1-800-328-6553
www.3M.com/foodsafety

3M Canada
Post Office Box 5757
London, Ontario N6A 4T1
Canada

1-800-364-3577