July 2025

Neutralizing and General Dilution Buffers

Neutralizing and General Dilution Buffers have 2 main uses:

a. **Environmental swabbing/sponging** to collect/dilute environmental microbial samples. These in turn have 2 main uses: **monitoring potential sources of contamination** and verifying the **effectiveness of the cleaning /sanitation process**.
b. **Microbiological analysis:** for microbial indicators and pathogen-specific tests.

For information on cleaning and sanitizing measures, it is recommended that swabs be taken after cleaning and rinsing but prior to sanitizing or long after sanitizing at set time. This will allow for cleaning efficacy validation as well as effectiveness of residual sanitizers.

To get information on microbiological environmental conditions during production, it is recommended that samples be taken before and during production of surfaces and products and if after sanitizing using the recommended buffers.

It is important to ensure that the neutralizer/buffer chosen is effective against the disinfectants used.

When sampling on a surface previously exposed to chemicals (cleaners or sanitizers), it is necessary to incorporate a neutralizing agent suitable for the medium to preserve the viability of the microbial cells.

Guide for selecting a neutralizing solution

The following table serves as a guide for selecting the most efficient buffer/neutralizing solution for the most common cleaning products. For quantitative analysis, it is also important to use a neutralizing agent that will not promote bacterial growth, such as a neutralizing buffer.

In addition, microbiological analysis should be carried out as soon as possible after sampling to avoid losses due to the death of viable micro-organisms.

	BUFFER TYPE				
SANITIZER CLASS	**D/E NEUTRALIZING BROTH**	**LETHEEN BROTH**	**NEUTRALIZING BUFFER**	**BUFFERED PEPTONE WATER**	**Butterfield's Phosphate buffer**
Glutaraldehyde's	•		•		
Formaldehydes	•	•	•		
Chlorine, bromine and iodine	•		•		
Quaternary ammonium compounds (Quats/QACs)	•	•	•		
Chlorhexidine	•	•			
Phenols (LpH)	•	•			
Alcohol	•	•			
Peroxides	•				
Acetic and lactic acids	•			•	
Sample dilutions laboratory procedures					•

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Neutralizing Buffer contains nutritive components which aid in the recovery and growth of microorganisms in samples taken from surfaces exposed to sanitizing agents. It has the ability to inactivate the bactericidal and bacteriostatic effects of sanitizing agents such as chlorine and quaternary ammonium compounds (quats). *Recommended use: Neutralizing Buffer is recommended for detection of microorganisms found on dairy and food equipment disinfected with chlorine or quats. It is also recommended for the digestion and decontamination process of mycobacteria during TB diagnoses[1]. Decontamination and digestion of the mucous components kills contaminating normal flora and allows slower growing mycobacteria to grow. Timely neutralization prevents potential loss of mycobacteria caused by high pH levels of decontaminants, resulting in the preservation of more viable organisms for diagnostic protocols.

Neutralizing Buffer	Non-food and food contact surfaces	SS7315NB	All-in-One Sponge with Neutralizing Broth (100/cs)
		BS10NB	Sterile Cellulose Sponge - Neutralizing Buffer (100/cs)
		SS-NB2510S	Sponge Stick with Neutralizing Buffer (100/cs)
		MFS3005	DiluSwab - Neutralizing Buffer, 10ml (100/cs)

D/E Neutralizing Buffer was developed by Dey and Engley and contains additional compounds to the neutralizing buffer. It is used to neutralize a broad spectrum of disinfectants and preservative antimicrobial chemicals, including chlorine and quaternary ammonium compounds, phenolics, iodine, mercurials, peracetic acid, hydrogen peroxide, formaldehyde, and glutaraldehyde. D/E Neutralizing media neutralize higher concentrations of residual antimicrobials when compared with other standard neutralizing formulations, such as Neutralizing Buffer, Letheen media etc. *Recommended use: D/E Neutralizing Broth is recommended for use in disinfectant evaluations, environmental sampling (swab and contact plate methods), and testing of water-miscible cosmetics/antiseptics. -As per CFIA, used for Listeria sample collection.

DE Neutralizing buffer	Non-food and food contact surfaces	SS7314DE-NB	All-in-One Sponge with D/E Neutralizing Broth (100/cs)
		SS-DE2510S	Sponge Stick with D/E Neutralizing (100/cs)
		MFS3004	DiluSwab - D/E Neutralizing Broth, 10ml (100/cs)
		MZS2001	All-in-One Sponge with D/E Neutralizing Broth (100/cs)
		BS10DE	Sterile Cellulose Sponge – D/E neutralizing buffer (100/cs)

Letheen Broth is a liquid medium recommended for use in qualitative procedures for testing chlorine, fluoride and quaternary ammonium compounds for antimicrobial activity. It was originally developed as a subculture medium for the neutralization of quats.
*Recommended use: Recovering bacteria from the solutions containing residues of sanitizers from food utensils and equipment.

Letheen Broth	Non-food and food contact surfaces	SS7312LB	All-in-One Sponge with Letheen Broth, 100/cs
		MFS3006	DiluSwab - Letheen Broth, 10ml (100/cs)
		MZS2004	All-in-One Sponge with Letheen Broth (100/cs)
		BS02LB	Scigiene Sterile Cellulose Sponges - Letheen Broth (50/cs)

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Buffered Peptone Water (BPW) is a pre-enrichment medium designed to help recovery of sub-lethally damaged Salmonella before transfer to a selective medium. This pre-enrichment medium is free from inhibitors and is well buffered and provides conditions for resuscitation of the cells that have been injured by processes of food preservation (heat, desiccation, low pH, food preservatives etc.)[3] *Recommended use: Buffered peptone water is highly recommended for vegetable specimens and fermented products which have low buffering capacity. This medium can be used for testing dry poultry feed.

Buffered Peptone Water	Carcasses, Non-food and food contact surfaces	SS-BPW2510S	Sponge Stick with Buffered Peptone Water (100/cs)
		MFS3001	DiluSwab - 10ml Buffered Peptone Water Broth (100/cs)
		BS10BPW	Sterile Cellulose Sponge -Buffered Peptone Water (100/cs)
		MZS2003	All-in-One Sponge with Buffered Peptone Water Broth (100/cs)

Butterfield's Phosphate Buffer provides a standardized medium for the preparation of sample dilutions during plate count and other laboratory procedures. It eliminates the variations in pH associated with the use of distilled water. BPB is also known as Butterfield's phosphate buffered dilution water or Butterfield's Phosphate Diluent. *Recommended use: It is recommended as a general diluent in laboratory procedures. In addition, BPB is described in Standard Methods for the Examination of Water and Wastewater for use in water testing. The buffer is also recommended for use in microbial limit testing for pharmaceutical products.

Butterfields Phosphate Buffer	a general diluent in laboratory procedures	BS10BPB	Sterile Cellulose Sponge - 100/cs
		MFS3002	DiluSwab - 10ml Phosphate buffer (100/cs)
		SS-PBS2510S	Sponge Stick with Phosphate Buffered Saline (100/cs)

0.85% Normal Saline	a general diluent in laboratory procedures	MFS3003	DiluSwab - 10ml 0.85% Normal Saline (100/cs)
Dry Sponge		SS10DR	All-in-One SurfACE Sponge-Stick - Dry, 100/cs

References: 1. Cernoch, Enns, Saubolle and Wallace. 1994. Cumitech 16A, Laboratory diagnosis of the mycobacterioses. Coord. ed., Weissfeld. American Society for Microbiology, Washington, D.C 2. Engley, F. B., Jr. and B. P. Dey. 1970. A universal neutralizing medium for antimicrobial chemicals. Presented at the Chemical Specialties Manufacturing Association (CSMA) Proceedings. 56th Mid-Year Meeting. 3. Sadovski A.Y. (1977) J. Food Technol. 12. 85-91. 4. The United States Pharmacopeia. 2009. 32nd ed. United states Pharmacopeial Convention, Rockville, MD

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