

### Certificate of Analysis

**Product: Benzalkonium Chloride 50% Solution**

**Item Number: BZKNF50**

**Grade: NF**

**Lot Number: 230514-A**

**Manufacture Date: 03/09/2023**

**Expiration Date: 03/08/2025**

**Country of Origin: United States**

| Tested Property                               | Specification                                 | Analysis              |
|---|---|-----------------------|
| Assay, Alkylbenzenedimethyl ammonium chloride | 47.5 -52.5% w/v                               | 51.2%w/v              |
| Description                                   | Clear liquid to slightly yellow               | Passes                |
| Odor  | Slightly aromatic odor                        | Passes                |
| Identification A                              | A white precipitate is formed                 | Passes                |
| Identification B (Chloride)                   | (191) Meets requirement                       | Passes                |
| Identification C                              | Organge-Red color is produced                 | Passes                |
| Identification D, HPLC                        | Retention time corresponds to standard        | Passes                |
| Alkyl Chain C12, %                            | ÃfÃçÃçâ, -Ã°Ã,Ã¥40.0                          | 67.8                  |
| Alkyl Chain C14, %                            | ÃfÃçÃçâ, -Ã°Ã,Ã¥20.0                          | 26.5                  |
| Alkyl Chain C12 + C14, %                      | ÃfÃçÃçâ, -Ã°Ã,Ã¥70.0                          | 94.3                  |
| Total alkyl ammonium chlorides, %             | 47.5-52.5                                     | 51.2                  |
| Limit of Amine and Amine Salts                | No Perceptible odor                           | Passes                |
| Free Amine (Mw226), mmol/g                    | ÃfÃçÃçâ, -Ã°Ã,Ã¥0.1                           | 0.031                 |
| Amine HCL (Mw262.5), mmol/g                   | Max. 0.011                                    | ÃfÃçÃçâ, -Ã°Ã,Ã¥0.011 |
| Alcohol Content if added                      | None Added                                    | 0.0000% none detected |
| Benzyl Alcohols, %                            | ÃfÃçÃçâ, -Ã°Ã,Ã¥0.5                           | 0.001                 |
| Benzaldehyde, %                               | ÃfÃçÃçâ, -Ã°Ã,Ã¥None Detected @ 0.0001% limit | 0.001                 |
| Chloromethyl Benzene, %                       | ÃfÃçÃçâ, -Ã°Ã,Ã¥None Detected @ 0.0001% limit | 0.001                 |
| Acidity or Alkalinity                         | ÃfÃçÃçâ, -Ã°Ã,Ã¥0.1ml 0.1N HCL or 0.1N NaOH   | 0.075ml 0.1N HCL      |
| Microbial Enumeration (61), (62)              | Aerobic Plate count <10cfu/g                  | Passes                |

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|                              |               |
|------------------------------|---------------|
| Yeast & Mold <10cfu/g        | Passes        |
| USP candida albicans         | None Detected |
| USP Aspergillus brasiliensis | None Detected |
| USP Bile Tolerant Gram-Neg.  | None Detected |
| USP Clostridia sp.           | None Detected |
| USP Escherichia coli         | None Detected |
| USP Staphylococcus sp.       | None Detected |
| USP Pseudomonas aeruginosa   | None Detected |
| USA Salmonella sp.           | None Detected |

### [Benzalkonium Chloride 50% Solution](#)

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