2731 Bartram Road
Bristol, PA 19007-6893
800.385.3153
www.unitedchem.com

CERTIFICATE OF ANALYSIS

PRODUCT NAME: CSDAU

CHEMICAL: C8 + Benzyl Sulfonic Acid

SILICA TYPE: Irregular particles 40-63 micron, 60 Angstrom pores

222290-AC LOT NUMBER:

| | | Specification Values | | Lot Analysis |
|----------------------------------|-------------|-----------------------------|------------|------------------------------|
| <u>Test</u> | Method | Min | Max | |
| Appearance | Visual | White Fine Powder | | White Fine Powder |
| Average Pore Size | SOP82-4.042 | 55Å | 65Å | 60Å |
| Surface Area (m ² /g) | SOP82-4.042 | 470 | 530 | $504\text{m}^2/\text{g}$ |
| Pore Volume (cm ³ /g) | SOP82-4.042 | 0.70 | 0.85 | $0.74 \text{ cm}^3/\text{g}$ |
| Carbon Analysis by Weight | SOP82-4.024 | 12.00% | 12.80% | 12.26% |
| (Organic Loading) | | | | |
| Cation Exchange | SOP82-4.025 | 0.065 meq/g | 0.088meq/g | 0.072 meq/g |
| %Recovery - Acid | SOP82-4.011 | 85.00% | 110.0% | Pass |
| %Recovery - Neutral | SOP82-4.011 | 85.00% | 110.0% | Pass |
| %Recovery - Base | SOP82-4.011 | 85.00% | 110.0% | Pass |

The shelf life is only valid if the material is stored in the original unopened container. The specifications and lot analysis are only valid using the listed methods. The test methods and specifications were current when the product was lotted.

CERTIFIED BY: NAME: L. Bender

TITLE: QC Analyst

Certificate issue DATE: 09/29/2022

2731 Bartram Road / Bristol, PA 19007 USA / Phone 215-781-9255 / Fax 215-785-1226