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|-------------------------------|--|-------------|
| | Date: | 10/09/14 |
| | Revision: | 04 |
| Document #: COFA-XXXXXXXXXXXX | Supersedes: | 03 |
| | Page | Page 1 of 1 |
| Title: | Propylene Glycol, USP/FCC K Certificate of Analysis | |

September 6, 2016

Re: Certificate of Analysis
Propylene Glycol, USP/FCC Kosher
Excipient Use Only

| | | | |
|---------------|-----------|---------------|--------|
| PO No.: | 8808 | Lbs: | 5690 |
| Lot No.: | 16-194-07 | Mfg Location: | U.S.A. |
| Mfg Date: | 7/12/16 | | |
| Exp. Date: | 7/12/18 | | |
| Customer No.: | N/A | | |
| BOL No.: | 38192 | | |

Attn: Quality Control Manager

| Test | Method | Specification | Result |
|---|--------------------|---------------------------------------|---------|
| Appearance | Organoleptic | Clear, colorless, viscous liquid | PASS |
| Specific Gravity @ 25°C | USP <841> | 1.035 - 1.037 | 1.036 |
| Assay | USP | 99.5% minimum | 99.94 |
| Identification A (IR) | USP <197F> | Meets requirements | PASS |
| Identification B, C (Limit of DEG and EG) | USP | Meets requirements | PASS |
| Chloride | USP <221> | Not more than 0.007% (70 ppm) | <1.0ppm |
| Heavy Metals | USP <231> | 5 ppm maximum | PASS |
| Residue on Ignition | USP | Not more than 0.007% (70 ppm) | 0.0015 |
| Sulfate | USP <221> | Not more than 0.006% (60 ppm) | PASS |
| Residual Solvents | USP <467> | Meets requirements | PASS |
| Acidity | USP | 0.20 ml 0.10N NaOH maximum (NMT 2.0%) | 0.0001 |
| Water | USP <921> Method I | Not more than 0.2% | 0.03 |
| Lead | FCC | Not more than 1 mg/kg (1 ppm) | <1.0 |
| Distillation Range | FCC | 185 – 189°C | 187/189 |

This product is excipient grade and not intended to be used as an active pharmaceutical ingredient or for specialist applications, such as parenteral, ocular, inhalation, open wound use, or applications that require sterile and/or pyrogen-free excipients. Propylene Glycol products sold by Chemworld.com are not for use in any application intended to produce vapor, fog, mist, smoke or aerosol, wherein there is a possibility of inhalation. Chemworld.com expressly disclaims any and all liabilities related to the use of Propylene Glycol in such applications. Refer to the MSDS materials provided with your product's shipment for additional information about proper use and potential hazards of these products.