



ATLANTA WAREHOUSE
3939 Royal Drive, Suite 139
Kennesaw, GA 30144

UTAH WAREHOUSE
647 West Billinis Road, Unit 1
Salt Lake City, Utah 84119

Certificate of Analysis

PRODUCT: PROPYLENE GLYCOL USP-K CODE: SHIP DATE: 6/1/2016
EPC #: 10241 LOT #: 250418Y1

| LOT TESTING: | | |
|---|---------------------|--------------|
| TEST DESCRIPTIONS | SPECIFICATIONS | TEST RESULTS |
| Specific Gravity @ 25°C | 1.035 - 1.037 | 1.0357 |
| Color (Apha) | 10 Max | 10 |
| Appearance | Clear, Free | Pass |
| Purity | 99.5 % Min. | 99.856 |
| Identification, by IR | Compare to Standard | Pass |
| Water | 0.2 % Max | 0.01566 |
| VALIDATION TESTING: | | |
| *Specific Gravity @ 25°C | 1.035 - 1.037 | 1.03541 |
| *Assay | 99.5 % Min. | 100.00 |
| *Identification A, by IR | Pass/Fail | Pass |
| *Identification B, Limit of Diethylene Glycol | Pass/Fail | Pass |
| *Identification B, Limit of Ethylene Glycol | Pass/Fail | Pass |
| *Identification C | Pass/Fail | Pass |
| *Residue on Ignition (mg) | 3.5 Max | 0.00 |
| *Heavy Metals | 0.0005 % Max | <=0.0005 |
| *Chloride | 0.007 % Max | <=0.007 |
| *Sulfate | 0.006 % Max | <=0.006 |
| *Acidity (USP) | Pass/Fail | Pass |
| *Water | 0.2 % Max | 0.0208 |
| TYPICAL VALUES: | | |
| **Arsenic | 1 wt ppm Max | 1 |
| **CONEG Metals | Pass | Pass |
| **Distillation, IBP@ 760 mmHg (°C) | 186 Min. | 186 |
| **Distillation, DP@ 760 mmHg (°C) | 189 Max | 189 |
| **Oxidiz Subst as ml thiosulfate | 0.2 ml Max | 0.2 |
| **Refractive Index @ 20°C | 1.4310 - 1.4340 | 1.4312 |
| **Solubility @ 25°C | Pass/Fail | Pass |

*Results listed represent typical manufacturer values.

This product meets: U.S. Pharmacopoeia 38/National Formulary 33. This material is not intended for use as an Active Pharmaceutical Ingredient (API).