

CERTIFICATE OF ANALYSIS

PROPYLENE GLYCOL 99.9% USP/EP

Lot Number: WS118820062

Manufactured date: October 19th 2018

Expiry date: October 18th 2020

Manufacturer: North American

| PROPERTIES | UNITS | RESULTS | SPECIFICATIONS |
|---|--------|---------|-----------------|
| Assay,* Current USP | % | 99.95 | 99.80 min |
| Acidity (as Acetic Acid),* Current USP | mL | 0.01 | 0.20 max |
| Chlorides,* Current USP | ppm | < 70 | 70 max |
| Heavy Metals,* Current USP | ppm | < 5.0 | 5.0 max |
| Residue on ignition,* Current USP | mg/50g | 0.29 | 3.50 max |
| Specific Gravity @ 25/25°C, Current USP | | 1.036 | 1.035 - 1.037 |
| Sulphates,* Current USP | ppm | < 60 | 60 max |
| Water Content, KF Current USP | wt. % | 0.032 | 0.200 max |
| Identification, Test A Current USP | | | |
| Identification | | Passes | Matches IR Scan |
| Identification Test B, Current USP | | | |
| Ethylene Glycol | | Passes | Current USP |
| Diethylene Glycol | | Passes | Current USP |
| Identification Test C, Current USP | | Passes | Matches GC Scan |

* Data based on manufacturer's document

Quality Control



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|---|-------|---------|----------------|
| Acidity,* Current EP | mL | 0.02 | 0.05 max |
| Boiling Point,* Current EP | °C | 185 | 184-189 |
| Clarity,* Current EP | | Passes | |
| Colour,* Current EP | | Passes | |
| Heavy Metals,* Current EP | ppm | < 5.0 | 5.0 max |
| Melting Point,* Current EP | °C | 125 | 121-128 |
| Oxidizing Substance (0.05M Na ₂ S ₂ O ₃),* Current EP | mL | 0.05 | 0.20 max |
| Reducing Substances,* Current EP | | Passes | |
| Refractive Index, Current EP | | 1.433 | 1.431-1.433 |
| Relative Density, Current EP | | 1.038 | 1.035 - 1.040 |
| Sulphated Ash,* Current EP | % | 0.0041 | 0.0100 max |
| Water Content, current EP | wt. % | 0.032 | 0.200 max |

| PROPERTIES | UNITS | RESULTS | SPECIFICATIONS |
|--|-------|---------|-----------------|
| Assay,* Current FCC | % | 99.95 | 99.80 min |
| Acidity,* Current FCC | | Passes | |
| Appearance | | Passes | C & F S M |
| Distillation (IBP),* Current FCC | °C | 186.8 | 185.0 min |
| Distillation (DP),* Current FCC | °C | 187.8 | 189.0 max |
| Lead (Pb),* Current FCC | ppm | < 1.0 | 1.0 max |
| Identification, IR scan | | Passes | Matches IR Scan |
| Residue on Ignition,* Current FCC | % | 0.0028 | 0.0070 max |
| Specific Gravity @25/25°C, Current FCC | | 1.036 | 1.035 - 1.037 |
| Water Content, KF | wt. % | 0.032 | 0.200 max |

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| Certificate of Analysis | | | | | |
|---|------|-------------|-------------|-------|-------------|
| Product Name Propylene Glycol USP/EP | | | | | |
| Test | Unit | Lower Limit | Upper Limit | Value | Method |
| Assay | % | 99.80 | - | 99.95 | Current USP |
| M Acidity | ml | - | 0.20 | 0.01 | Current USP |
| M Chlorides | ppm | - | 70 | < 70 | Current USP |
| M Heavy Metals | ppm | - | 5.0 | < 5.0 | Current USP |
| M Residue on Ignition per 50g | mg | - | 3.50 | 0.29 | Current USP |
| M Specific Gravity @ 25/25degC | | 1.035 | 1.037 | 1.036 | Current USP |
| M Sulfate | ppm | - | 60 | < 60 | Current USP |
| Water Content | % | - | 0.200 | 0.004 | Current USP |
| M ID Test A | - | - | - | Pass | Current USP |

It is hereby certified that the material indicated above has been inspected and tested in accordance with the conditions and requirements of the contract or purchase order and, unless agreed otherwise conforms in all respects to the specification relevant thereto and it meets all requirements of the current United States Pharmacopoeia, current Food Chemical Codex, current European Pharmacopoeia and current Pharmacopoeia of Japan.

* Data based on manufacturer's document

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Quality Control




- ⊙ Packaging
- ⊙ Labelling
- ⊙ Shipping
- ⊙ Warehousing