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Title:	<b>Propylene Glycol, USP/FCC K Certificate of Analysis</b>	

January 31, 2017

**CHEMWORLD, LLC**

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

PO No.: 9800  
Lot No.: 17-030-09  
Mfg Date: 01/30/2017  
Exp. Date: 01/30/2018  
Customer No.: N/A  
BOL No.: 40486

Lbs: 38400.00  
Mfg Location: U.S.A.

**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	99.92
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)	<70 ppm
Heavy Metals	USP <231>	5 ppm maximum	PASS
Residue on Ignition	USP	Not more than 0.007% (70 ppm)	34.4 ppm
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%)	0.01
Water	USP <921> Method I	Not more than 0.2%	0.01
Lead	FCC	Not more than 1 mg/kg (1 ppm)	<1.0ppm
Distillation Range	FCC	185 – 189°C	187.2/188.8°C

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, LLC are not for use in any application intended to produce vapor, fog, mist, smoke or aerosol, wherein there is a possibility of inhalation. ChemWorld, LLC 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.