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9/24/2014

ChemWorld

Re: Certificate of Analysis

Glycerin 99.7%, USP K LC

Excipient Use Only

Lot No.: 14-218-05A

Po. No.: 4449

Date of Mfr: 08/06/2014*

Attn: Quality Control Manager

TEST	METHOD	SPECIFICATION	RESULT
Color	Current USP	Meets Requirements	PASS
Color	APHA	5 maximum	1
Appearance	Organoleptic	Reference Standard	PASS
Assay, % Glycerol	Current USP	99.7% minimum	99.9
Assay, Anhydrous	Current USP	99.0 – 101.0 %	99.91
Water	USP Method I <921>	5.0% maximum	0.01
Specific Gravity @ 25°C	USP <841>	1.2490 minimum	1.2618
Identification A	Current USP (IR Scan)	Meets Requirements	PASS
Identification B	Current USP (GC) (Limit of diethylene glycol and ethylene glycol)	<0.1% of each	PASS
Identification C, GC (USP)	Current USP (GC)	Meets Requirements	PASS
Fatty Acids & Esters	Current USP	1 ml 0.5N NaOH maximum	0.2 mL
Residue on Ignition	USP <281>	100 ppm maximum	40 ppm
Chloride	USP <221>	10 ppm maximum	PASS
Sulfate	USP <221>	20 ppm maximum	PASS
Heavy Metals	USP <231>	5 ppm maximum	PASS
Chlorinated Compounds	Current USP	30 ppm maximum	PASS
Residual Solvents	USP Method IV <467>	Meets Requirements	PASS
Related Compounds	Current USP	< 0.1%	PASS
Physical form	Clear liquid	Clear liquid	PASS

*When stored in its original, unopened container at 35 - 95°F, this product has a minimum shelf-life of 2 year. Avoid exposure to extremely high or low temperatures. 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. Glycerin products sold by Avatar Corporation are not for use in any application intended to produce vapor, fog, mist, smoke or aerosol, wherein there is a possibility of inhalation. Avatar Corporation expressly disclaims any and all liabilities related to the use of Glycerin 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.