

## CERTIFICATE OF ANALYSIS

**Product Name** ETHYL ALCOHOL 95%, Grain Derived  
**Grade** Meets ACS/USP GRADE Monographs

**Date of Manufacture:** 04/15/20  
**Recommended Retest Date:** Three Years from Date of Manufacture

TEST	MONO GRAPH	SPECIFICATION	RESULT
Assay (by GC, corrected for water)	ACS	NLT 95.0%	95.01%
Assay (by specific gravity@15.56°C)	USP	94.9% - 96.0% (by volume)	95.01%
Proof	27CFR 30.23	Lot Analysis	190.0
Identification Test A	USP	It meets the specifications of the test for Specific Gravity	Pass
Specific Gravity	USP	0.812 - 0.816 @ 15.56°C	0.8158
Identification Test B	USP	Conforms to IR Spectra	Pass
Solubility in Water	ACS <sup>+</sup>	To Pass Test	Pass
Color of Solution	USP <sup>+</sup>	The Sample solution has the appearance of water or is not more intensely colored than the standard solution	Pass
Clarity of Solution	USP <sup>+</sup>	Sample solution A and Sample solution B show the same clarity as that of water, or their opalescence is not more pronounced than that of the Standard suspension A.	Pass
Color (APHA)	ACS	10 max	1
Acidity or Alkalinity	USP <sup>+</sup>	The solution is pink (30ppm, as acetic acid)	Pass
Titration Acid	ACS <sup>+</sup>	0.0005 meq/g max.	0.0002 meq/g
Titration Base	ACS <sup>+</sup>	0.0002 meq/g max.	< 0.0001 meq/g
Acetone/Isopropyl Alcohol	ACS	To Pass Test	Pass
Methanol	ACS	0.1% max	< 0.1%
Substances Darkened by Sulfuric Acid	ACS <sup>+</sup>	To Pass Test	Pass
Substances Reducing Permanganate	ACS <sup>+</sup>	To Pass Test	Pass
Limit of Nonvolatile Residue	USP <sup>+</sup>	NMT 2.5 mg	0.0 mg
Residue after Evaporation	ACS <sup>+</sup>	NMT 0.001%	0.000%
UV Absorbance	USP	Examine between 235nm – 340nm 240nm 0.40 max. 250nm-260nm 0.30 max. 270nm-340nm 0.10 max. The spectrum shows a steadily descending curve with no observable peaks or shoulders	0.18 0.07 0.02 Pass

TEST	MONO GRAPH	SPECIFICATION	RESULT	
Organic Impurities	USP	Methanol	200 ppm max.	None Detected
		Acetaldehyde and Acetal	10 ppm max.	None Detected
		Benzene	2ppm max.	None Detected
		Sum of all other impurities	300 ppm max.	None Detected

\* This test is performed quarterly

#### Certification and Compliance Statements

This lot of Ethyl Alcohol 95% complies with all of the current requirements listed in the United States Pharmacopeia, and American Chemical Society monographs.

Recommended retest period excludes UV Absorbance for pure Ethyl Alcohol unless packaged in glass or UV protected drums (see shelf life statement).

No chemicals whatsoever are used as solvents at any point in the manufacture, processing or packaging of ethyl alcohol. Only Class 2 and Class 3 residual solvents may appear as impurities / related substances / low level contaminants in Ethanol. Concentration of Class 2 and Class 3 residual solvents is below limits in the current USP/NF General Chapter <467> Option 1.

This product is not derived, nor does it come in contact with, any materials derived from bovine or other animal sources.

This product is for further commercial manufacturing, laboratory or research use, and may be used as an excipient or a process solvent for pharmaceutical purposes. It is not intended for use as an active ingredient in drug manufacturing nor as a medical device or disinfectant. Appropriate/legal use of this product is the responsibility of the user.