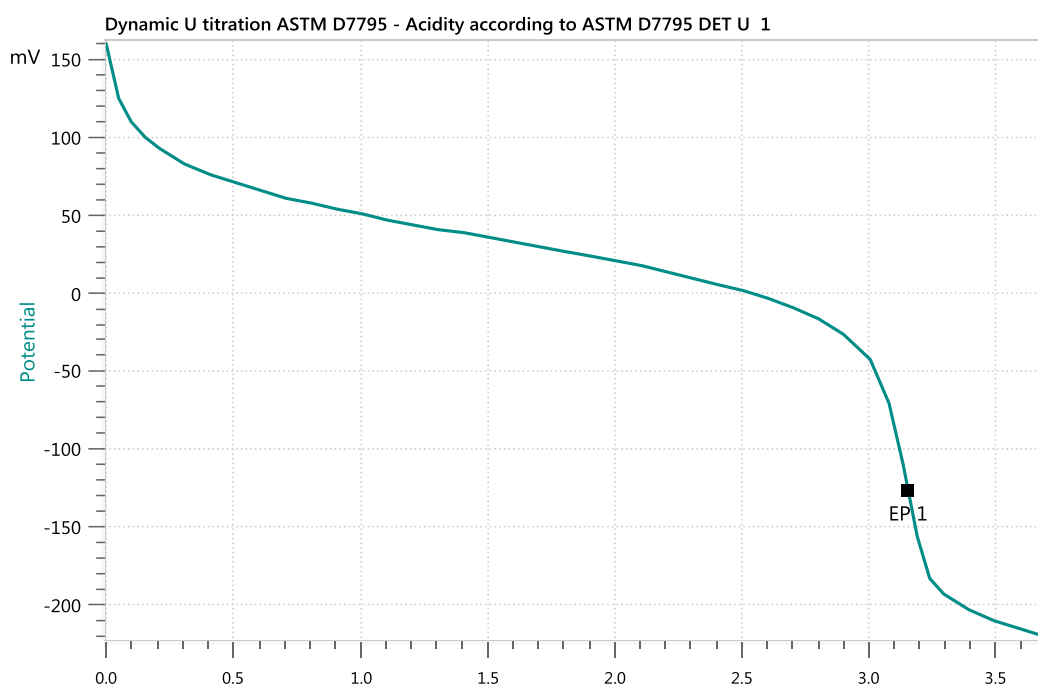


# Potentiometric determination of acidity in ethanol according to ASTM D7795



Denatured fuel ethanol may contain additives such as corrosion inhibitors and detergents as well as contaminants from manufacturing that can affect the acidity of produced ethanol fuel. An increased acid content in solvents could lead to a variety of problems like a shorter storage stability or chemical corrosion.

Using the dSolvotrode for indication, the acidity is determined as acetic acid by titration with sodium hydroxide as titrant.

# Method description

## Sample

Denatured ethanol

Denatured ethanol spiked with acetic acid (30 mg/kg acetic acid)

## Sample preparation

No sample preparation is required.

## Configuration

OMNIS Sample Robot S with one Pick&Place module and pump module (2-channel)	2.1010.1010
OMNIS Titrator Advanced without stirrer	2.1001.0210
OMNIS 10 mL cylinder unit	6.03001.210
Digital measuring module	6.02100.010
Electrode cable plug-in head Q / plug P, 1.5 m	6.02104.310
Stirring propeller 30 mm ETFE	6.01900.010
OMNIS Stand-alone license (including one instrument license)	6.06003.010
OMNIS instrument license, 1x	6.06002.010
dSolvotrode electrolyte c(LiCl) = 2 mol/L in ethanol	6.00203.300

## Solutions

Titrant	c(NaOH) = 0.01 mol/L, if possible this solution should be bought from a supplier.
Carbon dioxide free deionized water	10 L deionized water is purged with nitrogen for 1 hour.

## Analysis

55 g to 65 g sample is weighed into the sample beaker. The solution is then purged with nitrogen at a flow rate of 400 mL/min  $\pm$  20 mL/min for 120 s and then the solution is titrated with c(NaOH) = 0.01 mol/L until after the equivalence point. The nitrogen is sparged throughout the entire titration. After each titration, the solution is aspirated and the buret tips as well as the electrode are rinsed with carbon dioxide free deionized water. The glass membrane only is then conditioned for 2 min in deionized water.

## Parameters

Mode	DET U
Pause	30 s
Start volume	0 mL
Stirring rate	12
Signal drift	10 mV/min
Min. waiting time	10 s
Max. waiting time	52 s
Meas. point distance	2
Min. increment	50 $\mu$ L
Max. increment	100 $\mu$ L
Dosing rate	Maximum
Stop volume	5 mL
Stop measured value	-220 mV
Stop EP	Off
Volume after EP	0 mL
EP criterion	5
EP recognition	Last

## Results

Sample (n = 6)	Acidity / mg/kg	s(rel) / %
Denatured ethanol	0.9	0.5
Denatured ethanol spiked with acetic acid (30 mg/kg acetic acid)	29.9	0.2

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