

## Ethanol in water calibration standards

### 1. IDENTIFICATION OF SUBSTANCES

Ethanol in water solutions for breath simulators. Ethanol supplied by Merck Ltd. (*specification below*).

### 2. COMPOSITION DATA

*35 microgram ethanol in water solution.*

Accuracy required: 87.95 to 90.71 mg/100 cm<sup>3</sup>

Water	99.66 %
Ethanol	0.09%
CuSO <sub>4</sub> .5H <sub>2</sub> O	0.25% min.

*50 microgram ethanol in water solution.*

Accuracy required: 125.6 to 129.6 mg/100 cm<sup>3</sup>

Water	99.62 %
Ethanol	0.13%
CuSO <sub>4</sub> .5H <sub>2</sub> O	0.25% min.

*140 microgram ethanol in water solution.*

Accuracy required: 351.6 to 362.8 mg/100 cm<sup>3</sup>

Water	99.39%
Ethanol	0.36%
CuSO <sub>4</sub> .5H <sub>2</sub> O	0.25% min.

*200 microgram ethanol in water solution.*

Accuracy required: 502.6 to 518.3 mg/100 cm<sup>3</sup>

Water	99.24 %
Ethanol	0.51%
CuSO <sub>4</sub> .5H <sub>2</sub> O	0.25% min.

### 3. HANDLING & STORAGE

Avoid extremes of temperature. Store in a cool dark place.

#### Ethanol 99.7–100% v/v ("absolute") 'AnalaR'

C <sub>2</sub> H <sub>5</sub> OH	M.W.46.07
Minimum assay	99.8 (w/w) %
Identity	By IR spectrum
<i>Maximum Limits of Impurities</i>	
Colour	10 Hazen units
Water	0.2%
Acidity (CH <sub>3</sub> COOH)	0.0006%
Alkalinity (NH <sub>3</sub> )	0.0002%
Non-volatile matter	0.001%
Acetone [(CH <sub>3</sub> ) <sub>2</sub> CO]	0.001%
Aldehydes and ketones (CH <sub>3</sub> CHO)	0.001%
iso-Amyl alcohol [(CH <sub>3</sub> ) <sub>2</sub> CH(CH <sub>2</sub> ) <sub>2</sub> OH]	0.05%
Furfuraldehyde (C <sub>5</sub> H <sub>4</sub> O <sub>2</sub> )	0.001%
Fusel oil	Passes test
Higher alcohols (standard mixture)	0.02%
Methanol (CH <sub>3</sub> OH)	0.01%
Propan-2-ol [(CH <sub>3</sub> ) <sub>2</sub> CHOH]	0.003%
Aluminium (Al)	0.00001%
Barium (Ba)	0.000002%
Cadmium (Cd)	0.000005%
Calcium (Ca)	0.00005%
Chromium (Cr)	0.000002%
Cobalt (Co)	0.000002%
Copper (Cu)	0.000002%
Iron (Fe)	0.00001%
Lead (Pb)	0.000005%
Magnesium (Mg)	0.000005%
Manganese (Mn)	0.000002%
Nickel (Ni)	0.000002%
Potassium (K)	0.00001%
Sodium (Na)	0.00005%
Strontium (Sr)	0.000002%
Tin (Sn)	0.00001%
Zinc (Zn)	0.00001%
Substances darkened by sulphuric acid	Passes test
Substances reducing permanganate (O)	0.0003%

Also complies with BS 6376: Part 2: 1984 (ISO 6353/2-1983) and with the corresponding ACS specification

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