

Effect of the hygroscopic nature of pure ethanol in the accuracy of preparation of simulator solutions.

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A previously unopened bottle of pure, 200 proof ethanol (Aaper Alcohol and Chemical Co. Lot 99B250A, mfg 3/2/99) was used to obtain the data in the table below. Five 0.100 gm/210L simulator solutions were prepared. The first solution was prepared immediately after opening the bottle. The second solution was prepared after the bottle had been left open to the atmosphere for a half hour. Three more solutions were prepared after exposure of the ethanol in the bottle as indicated in the table. Each solution was prepared by first making up a fresh "working solution" from which the appropriate aliquot would be taken to dilute to 500 ml. The 500 ml solution thusly prepared was then transferred to a standard 34 °C "simulator". After the simulator had reached operating temperature, the solution was tested five times, using a CMI, Inc. Intoxilyzer 5000 evidential breath tester.

The result of this test indicates that water vapor in the ambient air is not a factor in the accuracy of the preparation of the solutions produced.

Solution	Exposure, hours	Alcohol reading, gm/210L				
		1	2	3	4	5
1	0.0	0.099	0.100	0.099	0.099	0.099
2	0.5	0.099	0.099	0.099	0.099	0.099
3	1.0	0.099	0.100	0.100	0.100	0.099
4	1.5	0.099	0.100	0.099	0.099	0.099
5	2.0	0.099	0.100	0.100	0.099	0.099

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Room temperature 25 °C

Barometric pressure 765.7 mmHg

Relative humidity 40%