VAPOR EQUIVALENT CONCENTRATION AND UNCERTAINTY

Provider:	ACS
Lot Number:	202106D
Date of Production:	1-Jul-21

Nominal Equivalent Vapor Concentration:			0.20 g/210 L vapor	
Reference Solution Concentration:	2.4272	g/L or	0.24272	g/100 mL
Expanded Uncertainty of CRM (k=2) :	± 0.0012	g/L or	± 0.00012	g/100 mL
Standard Uncertainty of CRM (u_{RM}) =	EU/2 =		± 0.00006	g/100 mL
Equivalent Vapor Concentration (Reference Value):			0.2006	g/210 L
Partition Coefficient for this Calculation:			1.21	
Combined Equivalent Vapor Concentration Uncertainty =			± 0.0021	g/210 L
Expanded Equivalent Vapor Concentration Uncertainty = **(k=2, , 95.45% confidence interval)**			± 0.0042	g/210 L

Note: Reference Solution Concentration in g/100 mL and its Uncertainty are calculated to five decimal places.
Equivalent Vapor Concentration and Uncertainty have been rounded to four decimal places.

Entered by: /S/ Shelley Benante Date: 7/21/2021

Verified by: /S/ Amanda Black Date: 7/28/2021

Calculation Method: By Excel
Verification Method: By hand calculator

ACS
ALCOHOL COUNTERMEASURE SYSTEMS
Alcohol Countermeasure Systems Corp
60 International Boulevard
Toronto, Ontario M9W 6J2
CANADA
acs-corp.com

Reference Material Certificate of Analysis

Product Identification:	Alcohol Reference Solution (ARS)	
CRM:	Ethanol in aqueous solution	
Reference concentration:	2.4200	g/L
Analytical concentration:	2.4272	g/L
Batch size:	350	bottles
Lot number:	202106D	
Date of production:	2021.07.01	(yyyy.mm.dd)

This certificate covers the production, analysis and certification of the Certified Reference Material (CRM) manufactured by Alcohol Countermeasure Systems Corp (ACS), located at 60 International Boulevard, Toronto, ON M9W 6J2 CANADA.

This metrology laboratory is accredited in accordance with international standards ISO/IEC 17025:2017 for competence of testing and calibration laboratories, and ISO/IEC 17034:2016 for the competence of reference material producers, demonstrating technical competence within the defined scope and the operation of a laboratory quality management system.

The analysis for certification of each lot of ARS is conducted within ACS forensic laboratory by an independent chemist using the direct injection, flame ionization gas chromatographic procedure coupled with the internal standard technique commensurate with forensic alcohol analysis.

This certificate is valid only for the ARS lot number identified above and does not extend to any other production lot of alcohol reference solution.

This certificate may only be reproduced in full.

ACCREDITED
CERT #4169.02
ISO 17034

ALCOHOL COUNTERMEASURE SYSTEMS CORP
METROLOGICAL LABORATORY

For and on behalf of the company,
ALCOHOL COUNTERMEASURE SYSTEMS CORP.

Felix JE Comeau, B.Sc (Honours)
Laboratory Director