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Date manufactured: 31-Mar-2017
Original issue date: 31-Mar-2017

Certificate of Analysis

Date Received: _____
Page 1 of 2 Rev 0

Catalog No.	Lot No.	Storage	Solvent	Expiration Date	Description
DRE- GA09010377 ME	304157	<10 Degrees C	P/T Methanol	31-Mar-2019	Allyl Alcohol Solution (SS), 500 mg/L, 1 ml (RM, ISO 17034)

Certified Values

The certified value is based on gravimetric and volumetric preparation of this CRM. This CRM has been confirmed by gas chromatography (GC), gas chromatography/mass spectrometry (GC/MS), or High Performance Liquid Chromatography (HPLC) using an internally developed method against an independent source. The uncertainty value is calculated for a 95% confidence interval with a k value of 2.

Compound	CAS No.	Purity (%)	Net Material Lot No.	Concentration, mg/L
allyl alcohol	107-18-6	99.6	225.1.2S	498 +/-26

Intended Uses

This Certified Reference material (CRM) is intended for use as a calibration standard or a quality control standard for Chromatography Equipment such as GC, GC/MS, HPLC, and HPLC/MS. It may also be used for various EN, ISO, EPA, and ASTM methods.

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Recommended storage container for ampuled products after opening is a 12mmx32mm amber vial with screw cap Teflon lined silicon septum. The modeled % change per day can be calculated using the following:

$$\% \text{ Change} = (-0.018 \ln(x+31) + 0.1157) + 636.54y^{-3.202}$$

where x = boiling point of the most volatile analyte in the mix
 y = boiling point of the solvent

This model assumes the container is stored at -10 °C and is unopened during storage. The user should determine what the acceptable error for their process is and calculate the maximum number of days the opened ampule should be stored.

Method of Preparation

All weights are traceable through N. I. S. T. Test No. 822/264157-00. Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

Packaging and Storage

The solution should be stored according to the following storage requirements: <10 Degrees C
Once the product is opened, it should be transferred to a vial with minimum head space if the product was in a sealed ampoule. Once opened, the expiration is determined by user specifications.

Glassware Calibration

Only Class A glassware is used in the manufacture and quality control of Standards. All glassware is calibrated using NIST traceable weights.

Weights and Balance Calibration

Weights used to perform daily checks on balances are calibrated annually within a calibration laboratory recognized

Certificate of Analysis

Page 2 of 2

Catalog No.: DRE-GA09010377ME

Lot No.: 304157

Expiration Date: 31-Mar-2019

by NIST as Echelon I. Balances are checked daily in accordance to in house procedures. Balances are calibrated annually by an ISO/IEC 17025:2005 and ISO Guide 34:2009 accredited metrology service.

Homogeneity

Random replicate samples of the final packaged CRM have been analyzed to prove homogeneity in accordance with internal procedures. This is consistent with the intended use of this CRM. The homogeneity of this product has been confirmed by procedures consistent with ISO/IEC guide 17025:2005 and ISO guide 34:2009.

Hazardous Information

Refer to MSDS

Calculation of Uncertainty

The following equations are used to calculate the value of the expanded uncertainty: $U = k u_c$: $U = \text{Expanded Uncertainty}$, $k =$ the coverage factor at the 95% confidence level, $k=2$, $u_c =$ the combined uncertainty $u_c = \sqrt{\sum u_i^2}$ where u_i are the individual uncertainty components for characterization, transportation, homogeneity, and shelf life.

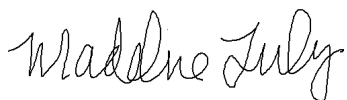
Expiration Information

The stability of this product is based upon rigorous short term and long term testing of the solution for the certified value. These tests include the effect of temperature and packaging on the product. This standard is guaranteed until the following date: 31-Mar-2019

Accreditation

This standard was manufactured by an ISO 17025 Chemical Testing Lab (Certificate number 3031.01) and ISO 17034:2016 Reference Material Producer (RMP) Certificate number 3031.02 accredited by The American Association of Laboratory Accreditation (A2LA). Manufacturer's Quality System audited and registered by NSF-ISR to ISO 9001:2008 (Certificate number IZ391-IS4).

Manufactured By:



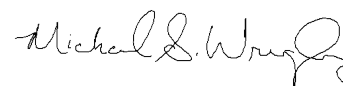
Madeline Luby
Chemist I

Certified By:



HuiChen Stavros, Ph.D.
Quality Control Manager

Released By:



Mike Wrigley
Chemist II