

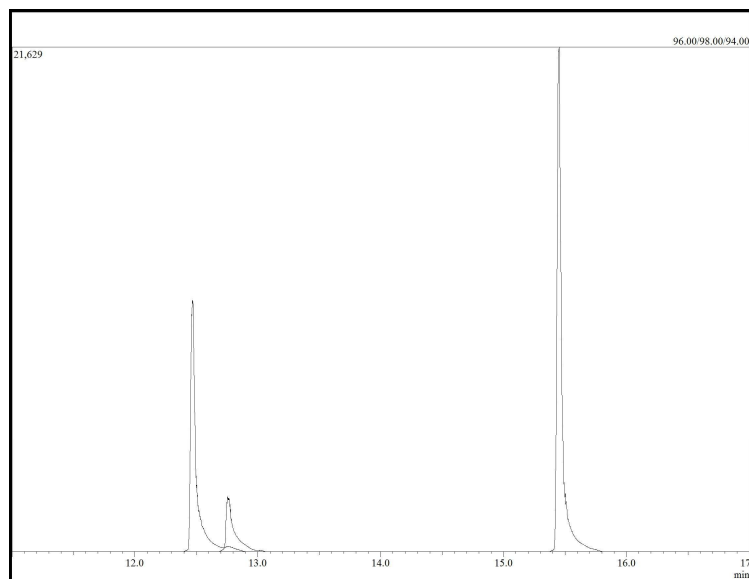
**Certified Reference Material**

This certificate is designed in accordance with ISO 17034 and ISO Guide 31. This certified reference material (CRM) was designed, produced and verified in accordance with ISO/IEC 17025, ISO 17034 and a registered quality management system ISO 9001.

<b>Product Name</b> Furfural Mixture 1 5000 µg/mL in Acetone	<b>Product Code</b> DRE-GS09000387AC	<b>Lot Number</b> 2-H381912NA	<b>Format</b> Multicomponent Solution	<b>Expiry Date</b> 15 Jul 2021	<b>Storage Temp</b> ≤ -10 °C
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Compound Name	CERTIFIED		CAS	Lot Number	Combined Purity (%)	Amount (mg)	RT (min)
	Concentration (mg/L)	Expanded Uncertainty U (mg/L)					
Furfural	4988	250	98-01-1	1264.29.1P	99.6	125.20	12.47
Furfuryl Alcohol	4978	250	98-00-0	1907.1.1P	99	125.70	12.76
Phenol	4979	250	108-95-2	112.9.5P	99.9	124.60	15.45

The producer certifies that this reference material meets the specification stated in this certificate until the expiry date, provided it is stored unopened at the recommended temperature herein. Product warranties for this reference material are set out in the terms and conditions of purchase.	<b>CERTIFIED BY</b>	<b>CERTIFIED ON</b>		<b>RM Release</b>
	HuiChen Stavros, Ph.D.	17 Jul 2019		



Instrument  
GC/MS

Detection  
MS

Column  
Phenomenex ZB-624 60m x 0.25  
mm, ID 1.4  $\mu$ m

Method Details  
Rate Temp.(C) Hold time (min)  
35.0 1.0  
10.0 70.0 0.0  
20.0 120.0 0.0  
10.0 200.0 0.0  
20.0 240.0 5.0

Inj.-Vol  
1  $\mu$ l

Flow  
1 ml/min

#### Method of Preparation

The certified value is based on gravimetric and volumetric preparation of this CRM. This CRM has been confirmed by the appropriate analytical techniques.

#### Batch Information

Solvent: Acetone w/ 0.1% Formic Acid, Lot no. 183551, 25 mL

#### Intended Use

This CRM is intended for use in a laboratory as a calibration and quality control standard or in method development for analytical techniques.

#### Safety

Proper precautions should be observed while handling. See Safety Data Sheet.

#### Uncertainty

The certified value(s) and uncertainty(ies) are determined in accordance with ISO 17034 with an 95% confidence level ( $k=2$ ). Uncertainty is based on the Total Combined Uncertainty, including uncertainties of preparation, purity of neat materials, homogeneity, long-term stability testing, and transportation stability.

#### Traceability

The balances used for gravimetric measurements are calibrated with weights traceable to the national standards (NIST). The calibration of the balances is verified daily internally and annually by an external accredited calibration service. Only Class A glassware is used for volumetric measurements.

#### Homogeneity

Random replicate samples of the final packaged CRM have been analysed to prove homogeneity consistent with ISO 17034.

#### Storage

The CRM should be stored in the original sealed bottle at the indicated temperature.

#### Instructions for Use

The CRM should be used shortly after opening to avoid concentration changes due to evaporation. It is recommended to use 1  $\mu$ L as the minimum sample size. If storage after opening is necessary, it should be transferred to an amber vial with minimum head space and a Teflon lined silicon septum. If handled as recommended, use period after opening is a maximum of 245 days for an estimated 5% drift in concentration as a result of analyte and/or solvent transpiration. Visit the support section of our website [lgcstandards.com](http://lgcstandards.com) for a series of Dr. Ehrenstorfer Tech Tip videos and frequently asked questions.