

## CERTIFIED REFERENCE MATERIAL Organic substance

**Ref No:** SB15731.1000    **Lot No:** 815113    **Certification Date:** 15.04.2022

**Barcode:** 41462034

**Description of the Reference Material (CRM):** 2-Methyl-2-butene

**CAS No:** 513-35-9    **Empirical formula:** C<sub>5</sub>H<sub>10</sub>    **MW:** 70.133

**Certified Purity/ Uncertainty:** 99.1 +/- 0.1 %

**Storage Conditions:** Store in a refrigerator at temperatures between 2°C to 8°C

**Expiry date:** 15.05.2024

**Method of certification:** CRM's calibration procedure (WQP 5.15.1/22)

The following methods of analysis are used to determine purity: GC/MS

### Analytical Data:

#### GC Conditions:

Column	Agilent CP9105 J&W VF-624ms 60m, 0.32mm, 1.80µm	Oven	Temperature	Hold
Flow rate	1.6 ml/min	Initial	40°C	4
Injector	200 °C	10°C/min	100°C	0
Injection volume	1µl split	20°C/min	150°C	5
Carrier gas	He, constant flow			

#### MS Conditions:

Transfer line	170°C	Ionization mode	EI
MS Source	230°C	Mode	Scan
MS Quad	150°C		

### Concept of Certification and traceability statement:

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA 4/02.

Metrological traceability is established through in-house validated method.



CPAchem Ltd. is accredited to  
ISO 17034 (Cert No AR-1835) and ISO/IEC 17025 (Cert No AT-1836)

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The measurement results are traceable to SI.

**Intended use:**

***For Laboratory Use Only***

This CRM is intended for:

- Calibration of TLC, GC/FID, GC/TCD, GC/ECD, GC/MS, GC/MS/MS, LC/UV, LC/MS and LC/MS/MS
- Validation of analytical methods
- Preparation of "working reference samples"
- Detection limit and linearity studies

This statement is not intended to restrict the use for other purposes.

**Instructions for the correct use of this reference material:**

This CRM can be used directly or can be diluted in an appropriate solvent. Only a clean glassware should be used.

**Stability and storage:**

This CRM is with a guaranteed purity +/- 2% deviation prior to the expiration date. Stability is guaranteed, provided that the material is kept in its original packaging, tightly closed stored, as written in the section: Storage Conditions.

Product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to ampoules stored after opening.

**Hazardous situation:**

The normal laboratory safety precautions should be observed when working with this CRM. Further details for the handling of this chemical are available as safety data sheet.

**Level of homogeneity**

The material was tested for homogeneity by analyzing randomly selected samples according to an in-house procedure. The level of homogeneity proved satisfactory for a sample volume of min. 2 mg. The uncertainty incorporates the sample standard deviation combined with the uncertainty calculated from homogeneity and stability studies.

This certificate relates solely to the lot number given above.

All processes (including generating of this certificate) are completely controlled by the specialized Computer-Aided-Manufacturing (CAM) software.

This Certified Reference Material was produced under a quality management system that is:

- Registered to ISO 9001 Quality Management System (Lloyd's Register Quality Assurance Ltd Cert No 0039638)
- Accredited according to ISO/IEC 17025
- Accredited according to ISO 17034

This document is designed and the certified value and uncertainty are determined in accordance with ISO Guide 31, ISO Guide 35, and Eurachem / CITAC Guides

**Names of certifying officers:**

Laboratory:  Margarita Dimitrova

Manager:  Krassimira Taralova

End

Area Percent Report

Data Path : C:\DATA\2022\04.2022\  
Data File : 2-Methyl-2-butene-41462034-s1.D  
Acq On : 14 Apr 2022 12:57  
Operator : MD  
Sample : 2-Methyl-2-butene-41462034-s1  
Misc :  
ALS Vial : 15 Sample Multiplier: 1

Integration Parameters: autoint1.e  
Integrator: ChemStation

Method : C:\DATA\2020\04.2020\Acetaldehyde-41340639-s1.D\815263.M  
Title :

Signal : TIC: 2-Methyl-2-butene-41462034-s1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	6.702	1600	1634	1679	M6	56848	2223425	0.47%	0.468%
2	7.272	1801	1835	1903	M2	10574310	469920783	100.00%	98.970%
3	7.582	1917	1944	1989	M2	68242	2668161	0.57%	0.562%

Sum of corrected areas: 474812369

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