



# Certificate of Analysis

## CERTIFIED REFERENCE MATERIAL Organic substance

Ref No: CM 52027

Lot No: 1034011

Certification Date: 28.08.2024

Barcode: 41576274

Description of the Reference Material (CRM): Dibutyl Fumarate

CAS No: 105-75-9

Empirical formula: C<sub>12</sub>H<sub>20</sub>O<sub>4</sub>

MW: 228.285

**Certified Purity/ Uncertainty:** 99.84 % (g/g) +/- 0.20 % (g/g)

**Water content: 0.9 mg/g (determined by Karl-Fischer titration)**

**Expiry date:** 28.09.2026

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

The following methods of analysis are used to determine purity (acc. to ISO 33407:2024): Characterization using indirect methods

Purity=100% - Assay organic impurities - Water content (KF) - Assay inorganic impurities

### 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.

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. Even if the product is stable at normal laboratory conditions, in order to increase its stability, we highly recommend it: Store under normal laboratory conditions, at temperatures between 15°C to 25°C .

**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 33401, ISO Guide 35, and Eurachem / CITAC Guides

Signed by:  ....., Manufacturing Manager



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**Analytical Data:**

GC Conditions:

Column	PerkinElmer Elite 5-MS 30m, 0.25mm, 0.25µm	Oven	Temperature	Hold
Flow rate	1.0 ml/min	Initial	50°C	1
Injector	250 °C	10°C/min	250°C	2
Injection volume	1µl split (split ratio 10:1)			
Carrier gas	He, constant flow			

MS Conditions:

Transfer line	250°C	Ionization mode	EI
MS Source	230°C	Mode	Scan
MS Quad	150°C		

Area Percent Report

Data Path : D:\MassHunter\GCMS\1\data\2024\08\  
Data File : Dibutyl Fumarate\_41576274-ss1.D  
Acq On : 27 Aug 2024 08:54  
Operator :  
Sample : Dibutyl Fumarate\_41576274-ss1  
Misc :  
ALS Vial : 131 Sample Multiplier: 1

Integration Parameters: events.e  
Integrator: ChemStation

Method : D:\MassHunter\GCMS\1\methods\Quant\1033815.M  
Title :

Signal : TIC: Dibutyl Fumarate\_41576274-ss1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	14.272	1313	1323	1378	M	29876346	550666591	100.00%	99.934%
2	17.289	1726	1735	1749	M4	10822	364907	0.07%	0.066%

Sum of corrected areas: 551031498

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