

# Certificate of Analysis

Dr. Ehrenstorfer



## Product Identification

14866020 (-)-Menthol  
CA 5-Methyl-2-(1-methylethyl)cyclohexanol  
IUPAC (1R,2S,5R)-2-Isopropyl-5-methylcyclohexanol  
Formula C<sub>10</sub>H<sub>20</sub>O  
Mol.Weight 156.27  
CAS No. 2216-51-5

## Reference Materials for Residue Analysis

Expiry Date 09.05.2021  
Lot Number 124579  
Store at 20 °C ±4 °C

Please note: The expiry date is valid under recommended storage conditions only.

## Toxicological Data



R Code 37/38-41  
S Code 22-25  
LD50 (Rats female/male in mg/kg) 3300

## Physical Data

Phase crystalline solid  
Color colourless  
Melt.Range 42,2 °C  
Vapour pressure N/A at °C  
Solubility in water insol. g/l at °C  
Boiling Range (lit.)

## Analytical Data

Detection: GC/FID  
Column: DB-5, 30 m, ID 0.25 mm  
Inj.-Vol.: 1.00 µl  
Flow: 1.0 ml/min  
Ret.-Time: 10.86 min.

Method Details:  
Injector: 280° C  
Start Temperature: 60° C for 5 min  
End Temperature: 280° C for 1 min  
Gradient: 15° C/min

Identity: RT, IR, MS  
Comment Purity was confirmed by external standard method.

Water Content 0.0 % Determined by Karl-Fischer Titration  
Det. Purity 99.5 % Tolerance/Uncertainty +/- 0.5 %

The uncertainty/tolerance of this standard is calculated in accordance with the EURACHEM/CITAC Guide - Quantifying Uncertainty in Analytical Measurement - Second Edition. The uncertainty given is the expanded combined uncertainty and represents an estimated standard deviation equal to the positive square root of the total variance of the uncertainty of components. The expanded uncertainty is U which is  $U_c(y) \cdot K$ , where K is the coverage factor at the 95% confidence level ( $K=2$ ). The expanded uncertainty is based on the combination of uncertainties associated with each individual operation involved in the preparation of this product.

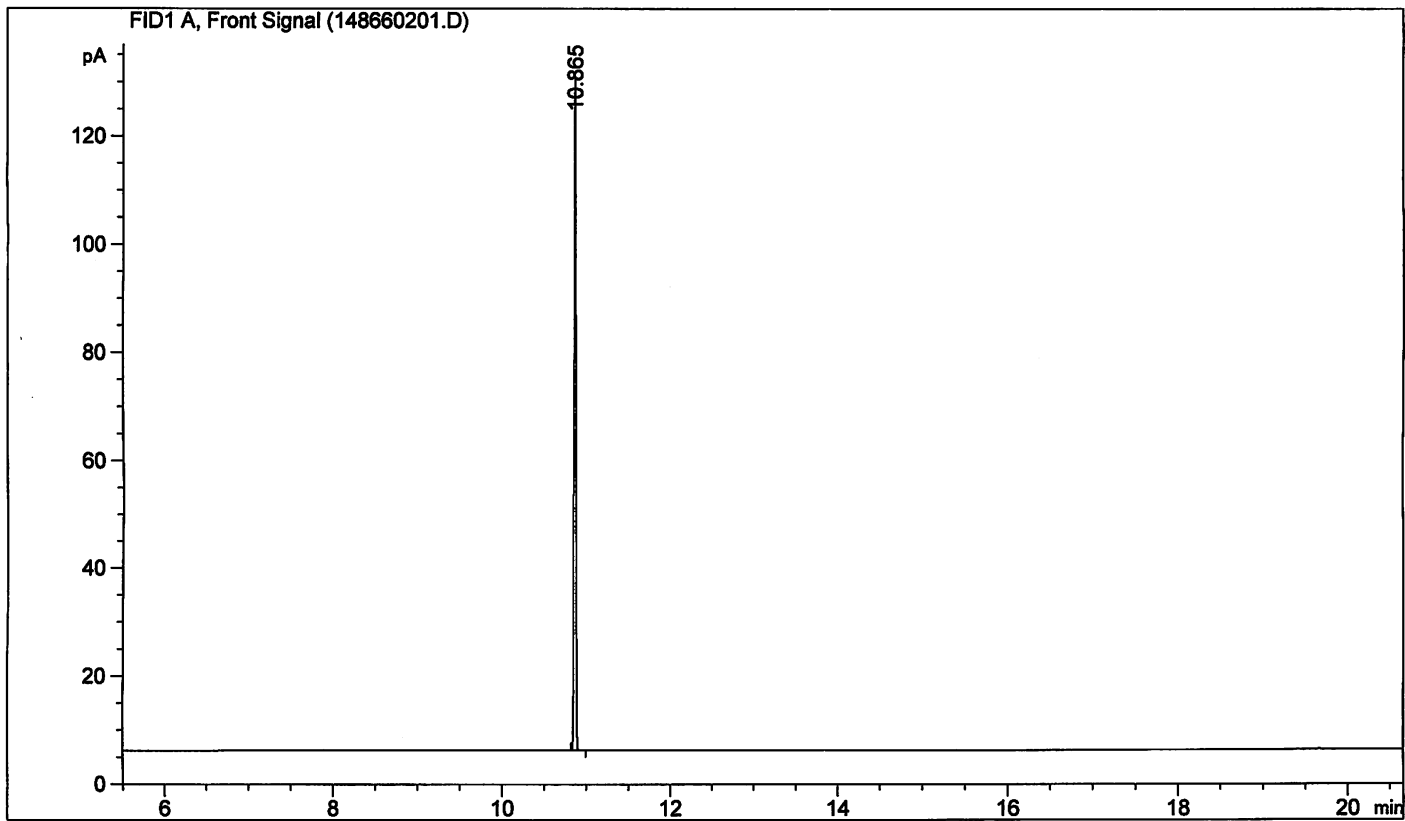
Certified on 09.05.2017  
by N. Müller

The Laboratory LGC Labor GmbH is accredited by DAkkS as indicated by the Accreditation Number D-RM-19883-01 & D-PL-19883-01 has shown competence based on ISO Guide 34:2009 with relevant parts of DIN EN ISO/IEC 17025:2005 for production of certified reference materials in form of organic pure substances and in form of single and multi-component solutions organic pure substances.

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The warranty for this product is limited to the purchasing price of this product.

8.5.17  
JD

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Acq. Operator   : FID2                      Seq. Line : 21
Acq. Instrument : GC-FID-2                  Location  : Vial 79
Injection Date  : 13.12.2016 03:41:41      Inj       : 1
                                           Inj Volume: 1 µl
Sequence File   : C:\Chem32\1\DATA\2016KW50\2016KW50-1A 2016-12-12 15-59-49\2016KW50-1A.S
Method          : C:\CHEM32\1\DATA\2016KW50\2016KW50-1A 2016-12-12 15-59-49\PESK.M (
                  Sequence Method)
Last changed    : 04.11.2015 11:25:42 by FID2
Method Info     : pesk
Sample Info     : (-)-Menthol
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Area Percent Report  
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Sorted By           : Signal
Multiplier:         : 1.0000
Dilution:           : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
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Signal 1: FID1 A, Front Signal

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Height [pA]	Area %
1	10.865	BB	0.0224	174.18343	124.03960	1.000e2
Totals :				174.18343	124.03960	