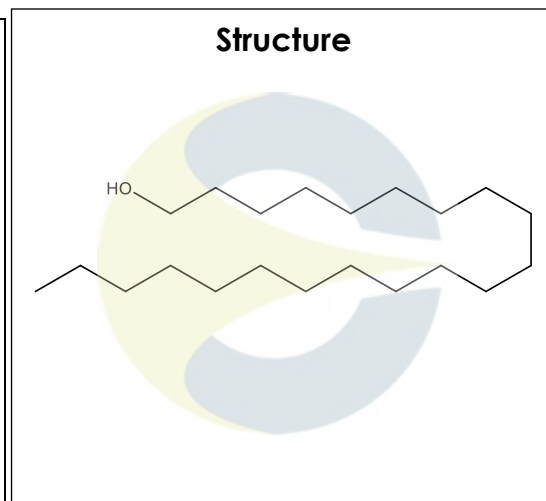


Certificate of Analysis
For Laboratory Use Only

| | |
|------------------------------|--|
| PRODUCT NAME | 1-Heneicosanol |
| PART NUMBER | 00008062 |
| STANDARD TYPE | Primary (P) |
| LOT NUMBER | 00008062-S01 |
| REPORT NUMBER | CDXA-RSS-2581-02 |
| SAMPLE NUMBER | CDXA-11-1034 |
| DATE OF SAMPLE | 02/16/2011 |
| DATE OF RE-EVALUATION | 08/04/2015 (1 st); 12/10/2021 (2 nd) |
| DATE OF REPORT | 01/06/2022 |



| | |
|------------------------------|-----------------------------------|
| CHEMICAL NAMES | Heneicosyl alcohol |
| CHEMICAL FORMULA | C ₂₁ H ₄₄ O |
| MOLECULAR WEIGHT (MW) | 312.57 |
| CHEMICAL FAMILY | Fatty alcohols |
| CAS NUMBER | [15594-90-8] |
| EC#(EINECS) | 239-673-2 |
| RTECS | NA |

ANALYTICAL RESULTS

| TEST | METHOD | SPECIFICATION | RESULT |
|------------------|--------------------|-----------------------|-----------------------|
| Adjusted Purity | NA | ≥ 85% | 99.3% |
| GC | 0.700.10.2.METH140 | ≥ 90% | 99.3% |
| NMR | 0.700.12.4 | Conforms to structure | Conforms to structure |
| Mass Spectrum | 0.700.10.2.METH140 | Conforms | Conforms |
| Residual Solvent | 99.1-CD-4.0-000115 | NA | ND |
| Water | 0.700.12.37 | NA | ND |
| Appearance | NA | NA | White solid |

ADJUSTED PURITY: 99.3% IS BASED ON (100 - 0.0 SOLVENTS - 0.0 WATER) X 99.3% GC

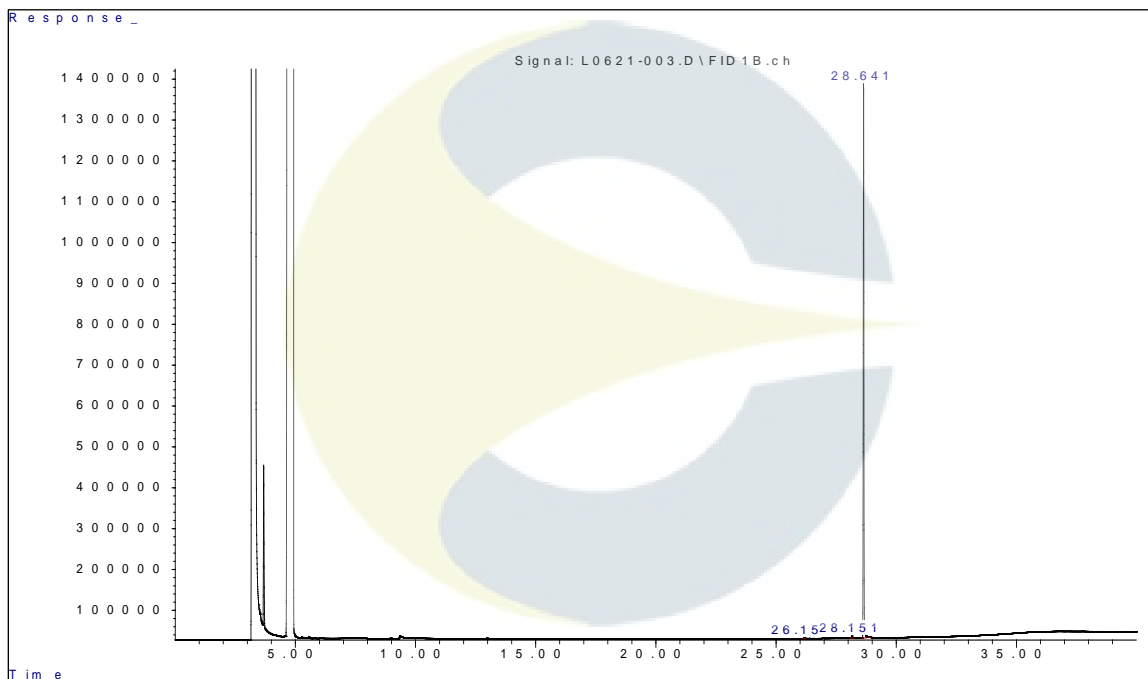
STORAGE CONDITIONS

| | |
|------------------------|-------------------------------------|
| STORAGE | +4 °C in a dry place. |
| EXPIRATION DATE | 12/2026 under the above conditions. |

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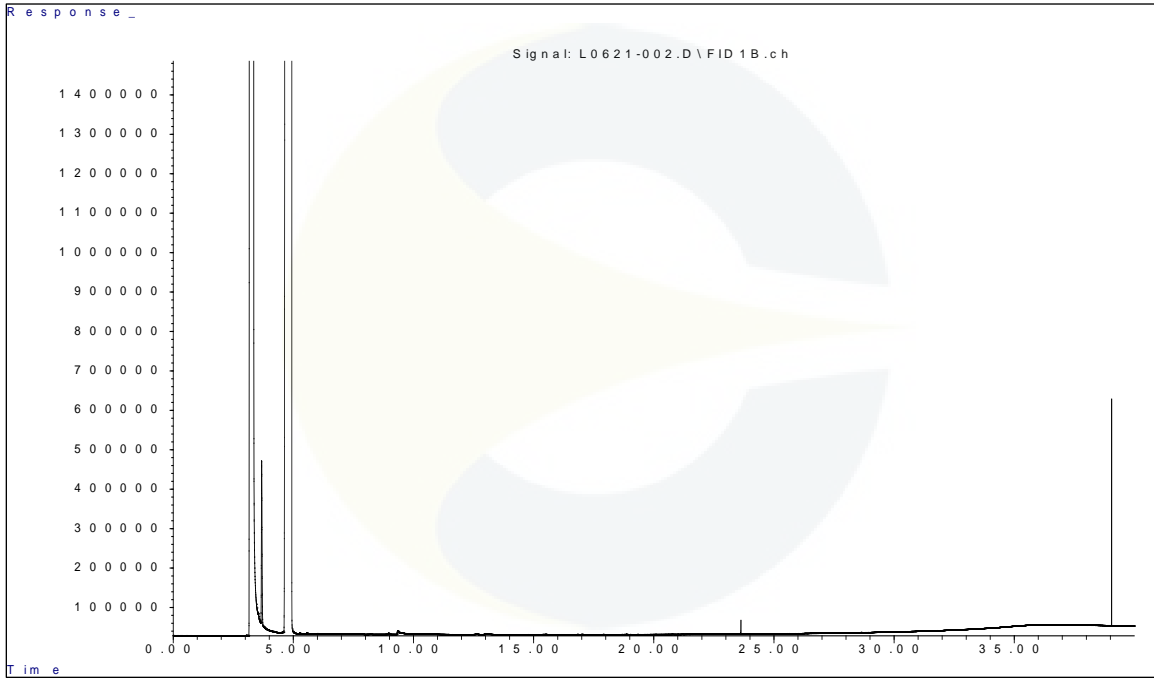
Certificate of Analysis
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ANALYTICAL CONDITIONS

| | |
|-----------------------------|--|
| INSTRUMENT | AGILENT 7890B WITH FLAME IONIZATION DETECTOR (FID) AND AGILENT 5977B MASS SELECTIVE DETECTOR (MSD) |
| COLUMN | Phenomenex Zebron ZB-5plus, 30 m x 0.32 mm x 0.25 µm |
| CARRIER GAS | Helium |
| COLUMN TEMP. | Isothermic 40 °C for 5.0 minutes, then increasing at 10.0 °C/minute to 340 °C. Hold at 340 °C for 5.0 minutes. |
| FLOW RATE | 2.0 mL/minute |
| INJECTOR TEMP. | 300 °C |
| INJECTOR SPLIT RATIO | 20:1 |
| INJECTION VOL. | 1.0 µL |
| INJECTION CONC. | 0.54 mg/mL in 1:1 Chloroform/Methanol |
| DETECTION | FID (300 °C) & MSD (Transfer line 280 °C, Source 230 °C, Quad 150 °C) |

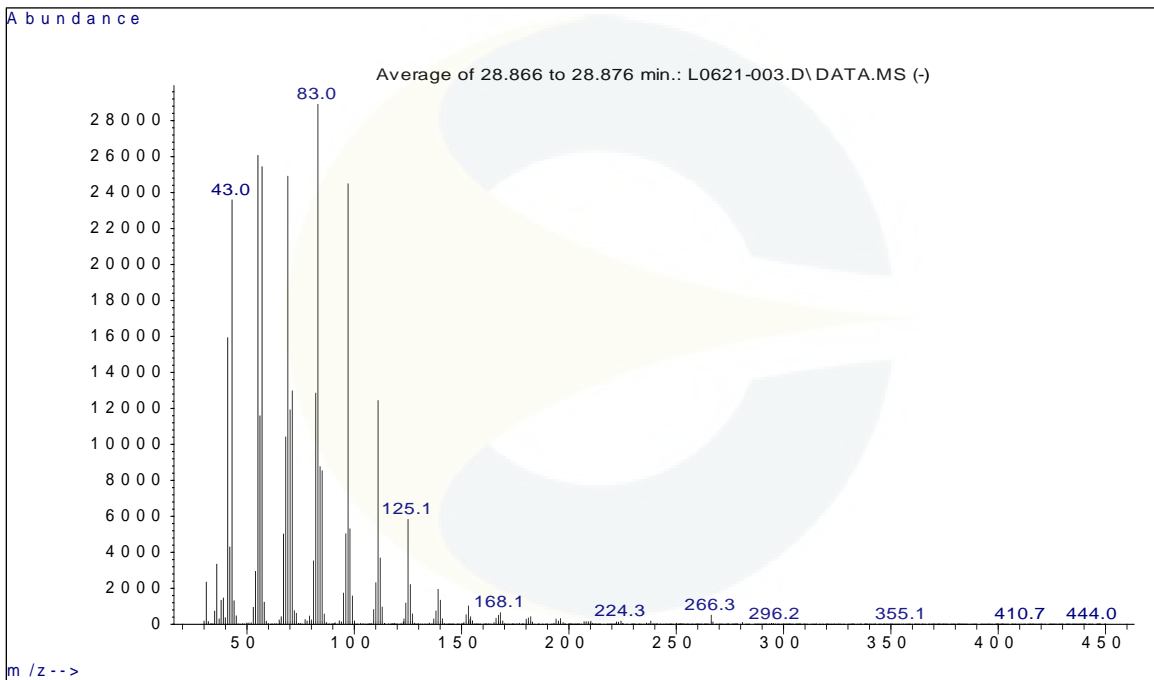
GC CHROMATOGRAM OF 1-HENEICOSANOL (CDXA-11-1034)


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GC CHROMATOGRAM OF DILUENT BLANK

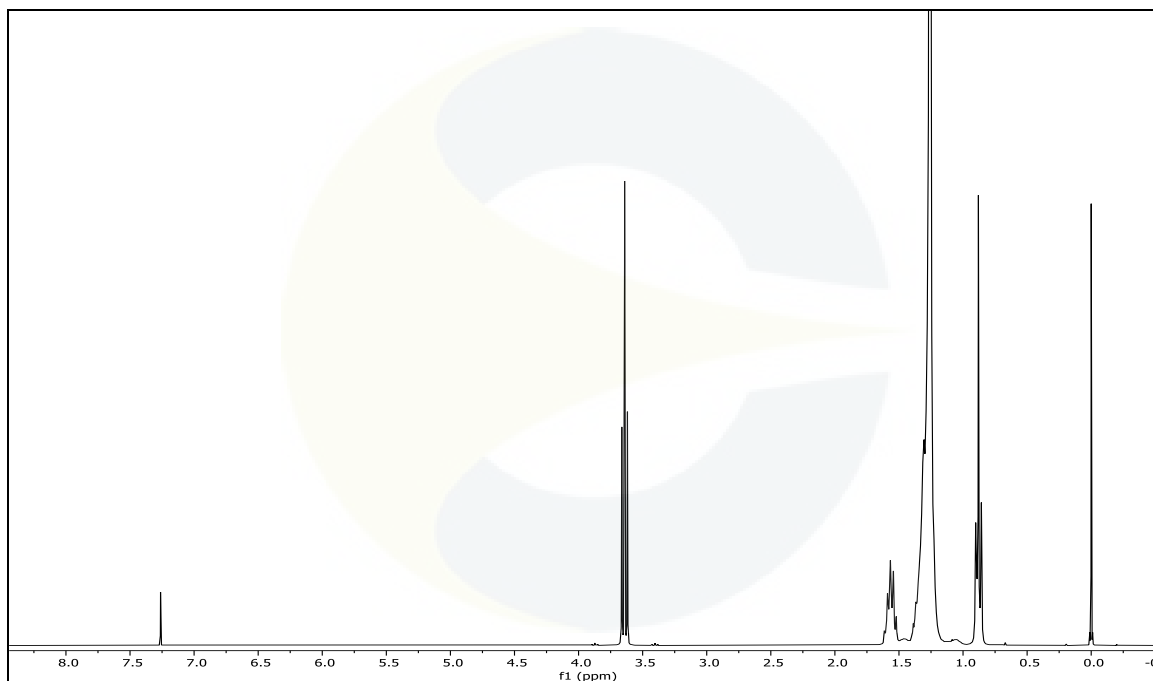


MASS SPECTRUM OF 1-HENEICOSANOL (CDXA-11-1034)

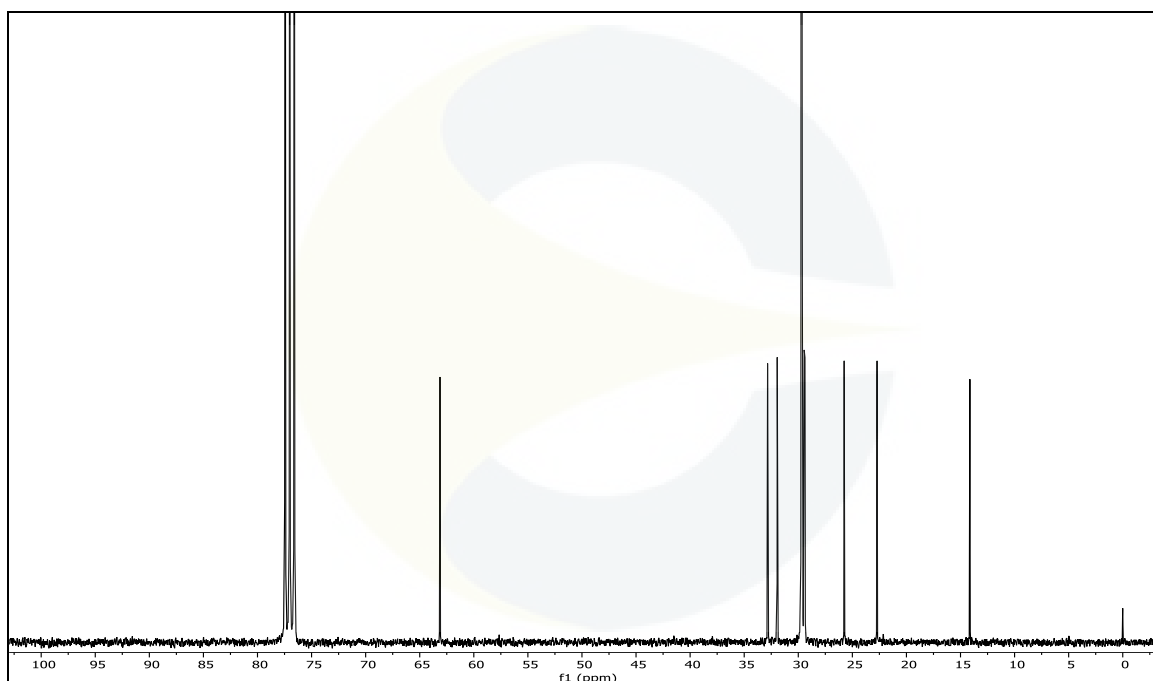


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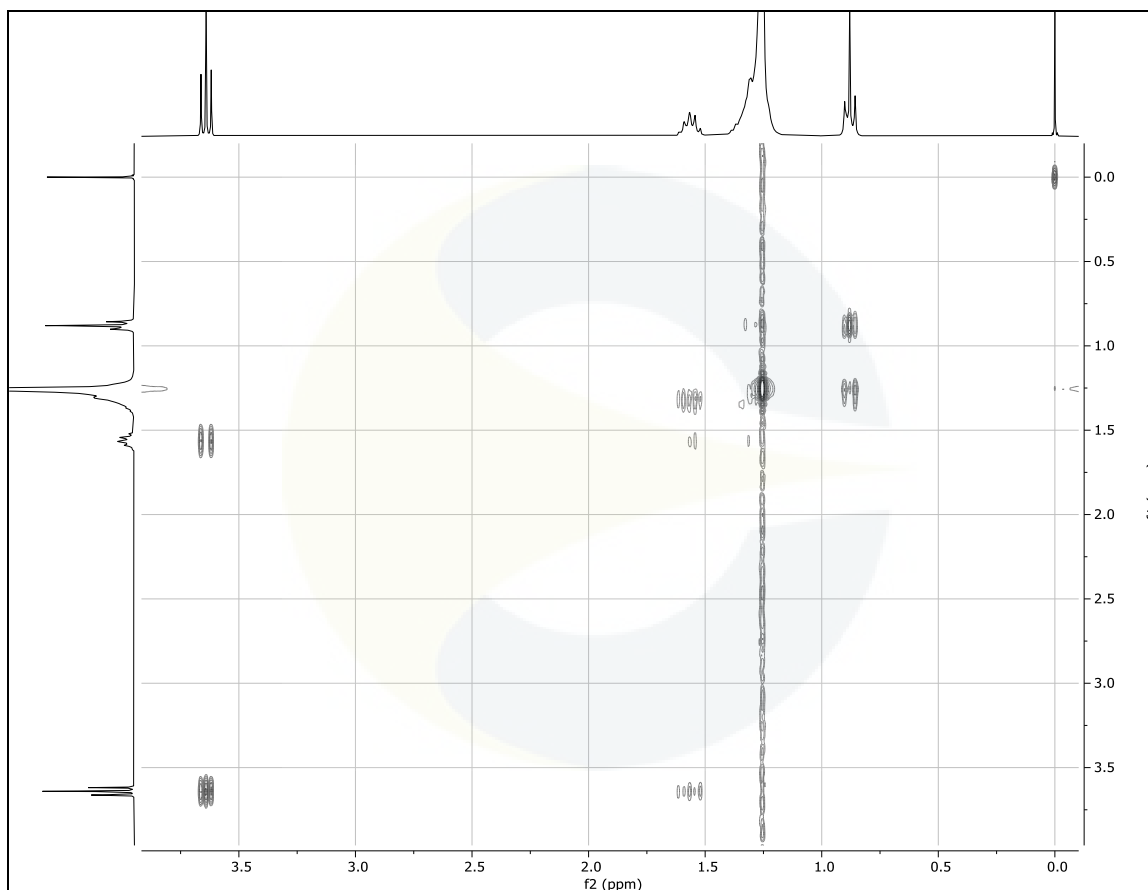
¹H-NMR SPECTRUM OF 1-HENEICOSANOL (CDXA-11-1034) IN CDCl₃ + TMS



¹³C-NMR SPECTRUM OF 1-HENEICOSANOL (CDXA-11-1034) IN CDCl₃ + TMS



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COSY-NMR SPECTRUM OF 1-HENEICOSANOL (CDXA-11-1034) IN $CDCl_3$ + TMS

REVISION HISTORY

| <u>Revision History</u> | <u>Date of Revision</u> | <u>Document/Changes</u> |
|-------------------------|-------------------------|--|
| 00 | 07/27/2011 | New report |
| 01 | 08/27/2015 | Passed re-evaluation by GC, KF. Updated product name, chemical names, expiration date, and melting point. |
| 02 | 01/06/2022 | Passed re-evaluation by GC-MS, KF and NMR. Updated expiration date, analytical conditions, results, chromatograms, and purity. |

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