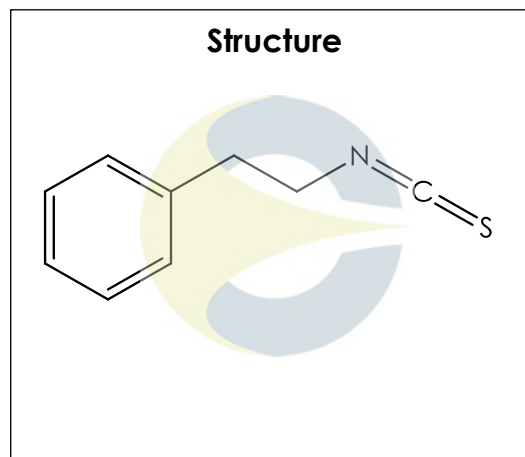


**Certificate of Analysis**

For Laboratory Use Only

<b>PRODUCT NAME</b>	Phenylethyl isothiocyanate
<b>PART NUMBER</b>	00016470
<b>STANDARD TYPE</b>	Primary (P)
<b>LOT NUMBER</b>	00016470-MSM
<b>REPORT NUMBER</b>	CDXA-RSS-8691-00
<b>SAMPLE NUMBER</b>	CDXP-19-00644
<b>DATE OF SAMPLE</b>	10/23/2019
<b>DATE OF REPORT</b>	11/22/2019



<b>CHEMICAL NAMES</b>	(2-Isothiocyanatoethyl)-benzene; 1-(2-Isothiocyanatoethyl)-benzene; 2-Phenylethyl isothiocyanate; Phenylethyl mustard oil
<b>CHEMICAL FORMULA</b>	C <sub>9</sub> H <sub>9</sub> NS
<b>MOLECULAR WEIGHT (MW)</b>	163.24
<b>CHEMICAL FAMILY</b>	Isothiocyanates
<b>CAS NUMBER</b>	[2257-09-2]
<b>EC#(EINECS)</b>	218-855-5
<b>RTECS</b>	NX9115000

**ANALYTICAL RESULTS**

TEST	METHOD	SPECIFICATION	RESULT
Adjusted Purity	NA	NA	98.7%
GC	0.700.10.2.METH140	NA	99.0%
NMR	0.700.12.4	Conforms to structure	Conforms to structure
Mass Spectrum	0.700.10.2.METH140	Conforms	Conforms
Residual Solvent*	TM6740 V1	NA	EtOH – 0.3% Ethyl Formate < 0.1%; Toluene < 0.1%
Water	0.700.12.37	NA	ND
Appearance	NA	NA	Clear Liquid

\*Testing performed at an ISO 17025 accredited subcontracted laboratory.

ADJUSTED PURITY: 98.7% IS BASED ON (100 - 0.3 SOLVENTS - 0.0 WATER) X 99.0% GC

**STORAGE CONDITIONS**

<b>STORAGE</b>	+4 °C in a dry place.
<b>EXPIRATION DATE</b>	10/2024 under the above conditions.

Yasaman Ghanei  
 Quality Manager,  
 Systems and  
 Compliance

Digitally signed by  
 Yasaman Ghanei  
 Date: 2019.11.25  
 12:08:49 -07'00'

This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

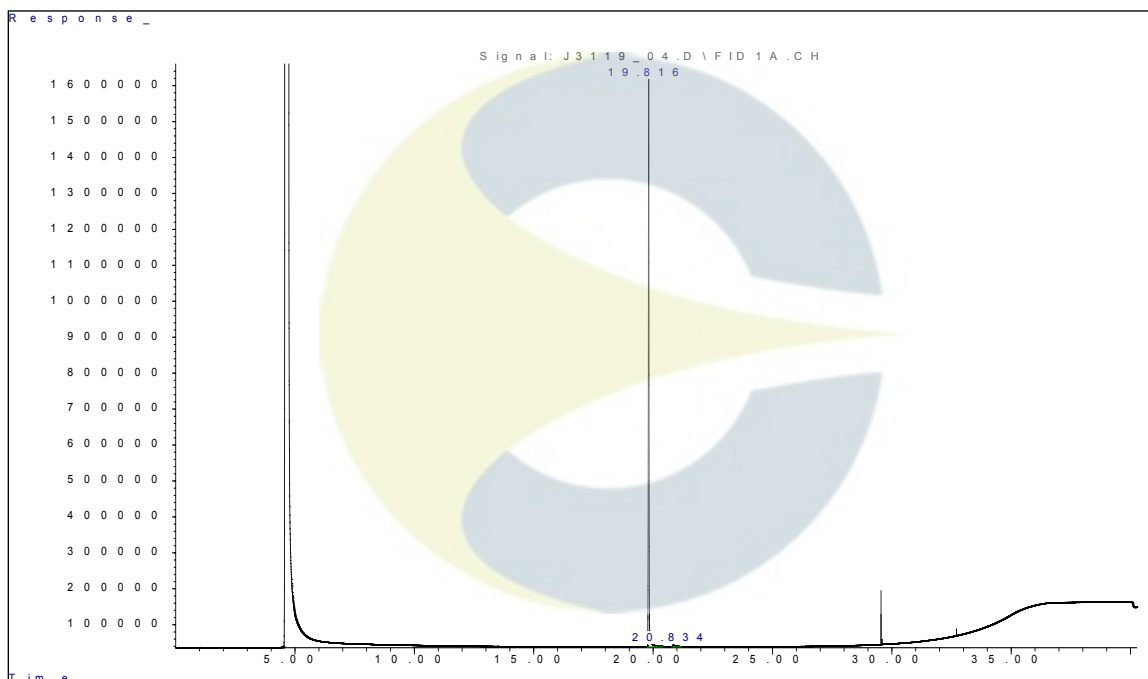
# Certificate of Analysis

*For Laboratory Use Only*

## ANALYTICAL CONDITIONS

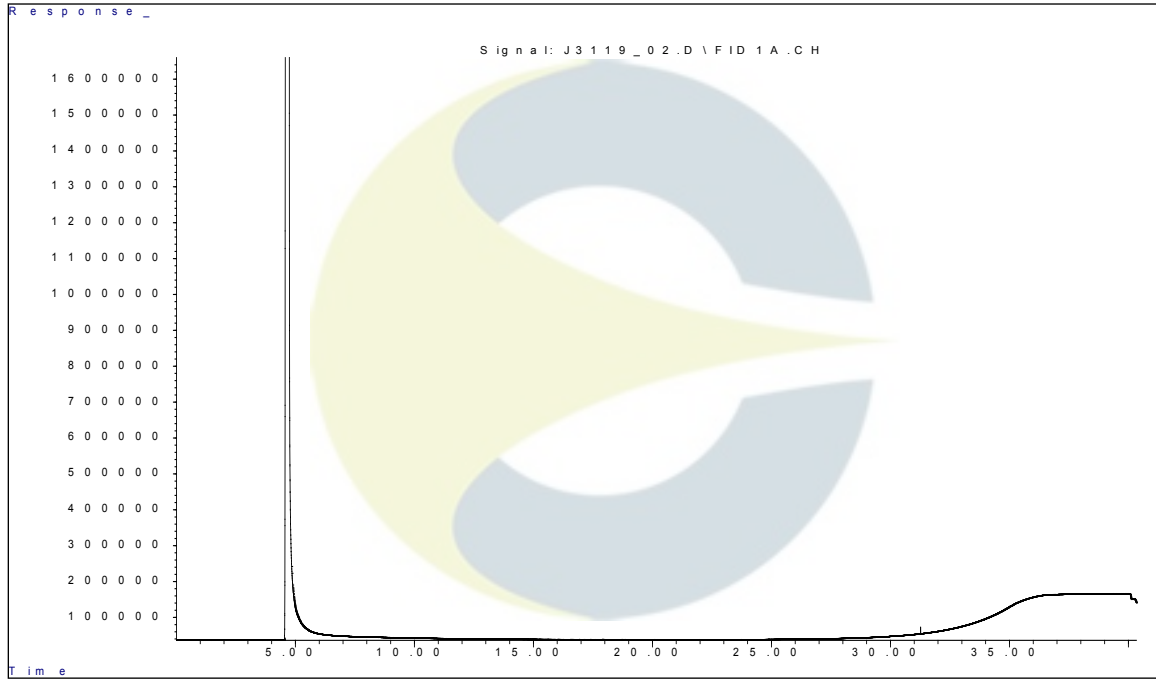
<b>INSTRUMENT</b>	AGILENT 6890N WITH FLAME IONIZATION DETECTOR (FID) AND AGILENT 5973N MASS SELECTIVE DETECTOR (MSD)
<b>COLUMN</b>	Phenomenex Zebron ZB-5HT Inferno, 30 m x 0.32 mm x 0.25 μm; connected to an MXT Y-union, connected to a Restek Siltek deactivated guard column: 10 m x 0.25 mm to FID; and a 5 m x 100 μm transfer line to MSD.
<b>CARRIER GAS</b>	Helium
<b>COLUMN TEMP.</b>	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.
<b>FLOW RATE</b>	2.0 mL/minute
<b>INJECTOR TEMP.</b>	300 °C
<b>INJECTOR SPLIT RATIO</b>	20:1
<b>INJECTION VOL.</b>	1.0 μL
<b>INJECTION CONC.</b>	1.8 mg/mL in Methanol
<b>DETECTION</b>	FID (350 °C) & MSD (Transfer line 300 °C, Source 250 °C, Quad 200 °C)

## GC CHROMATOGRAM OF PHENYLETHYL ISOTHIOCYANATE (CDXP-19-00644)

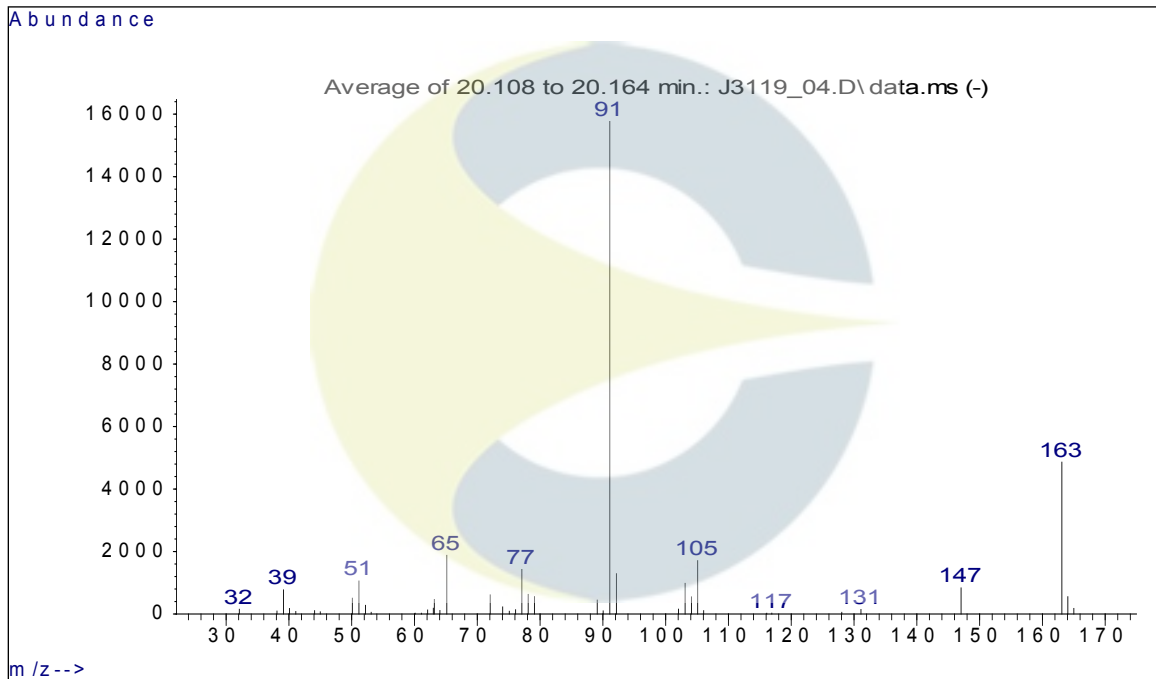


This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

**GC CHROMATOGRAM OF DILUENT BLANK**

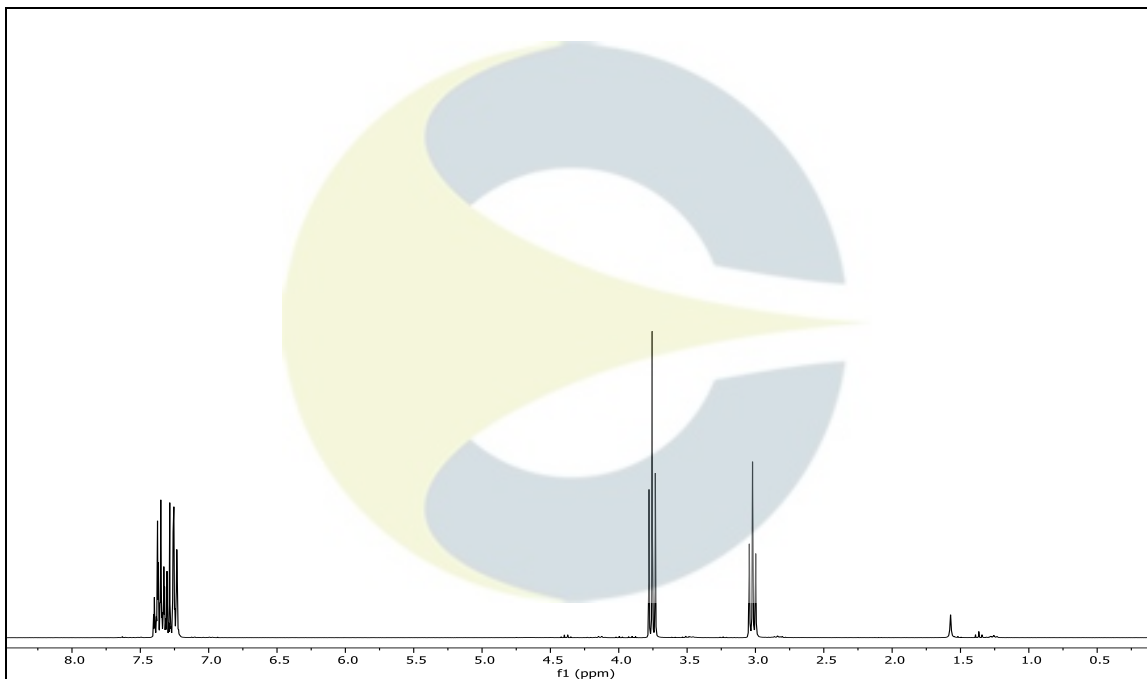


**MASS SPECTRUM OF PHENYLETHYL ISOTHIOCYANATE (CDXP-19-00644)**

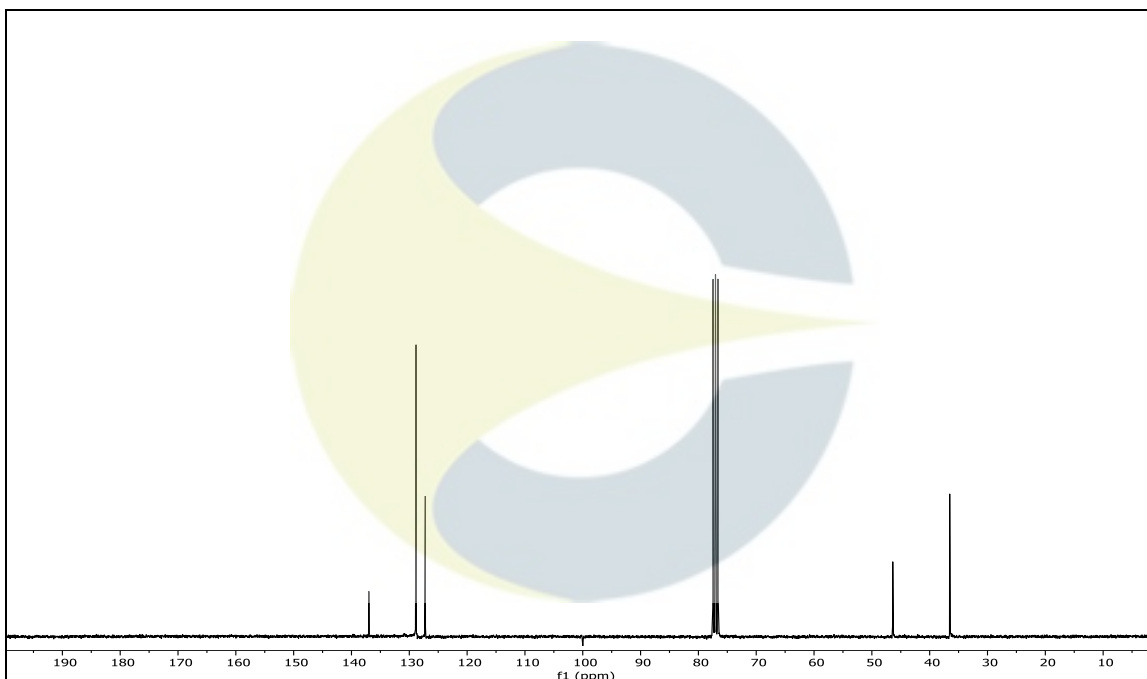


This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

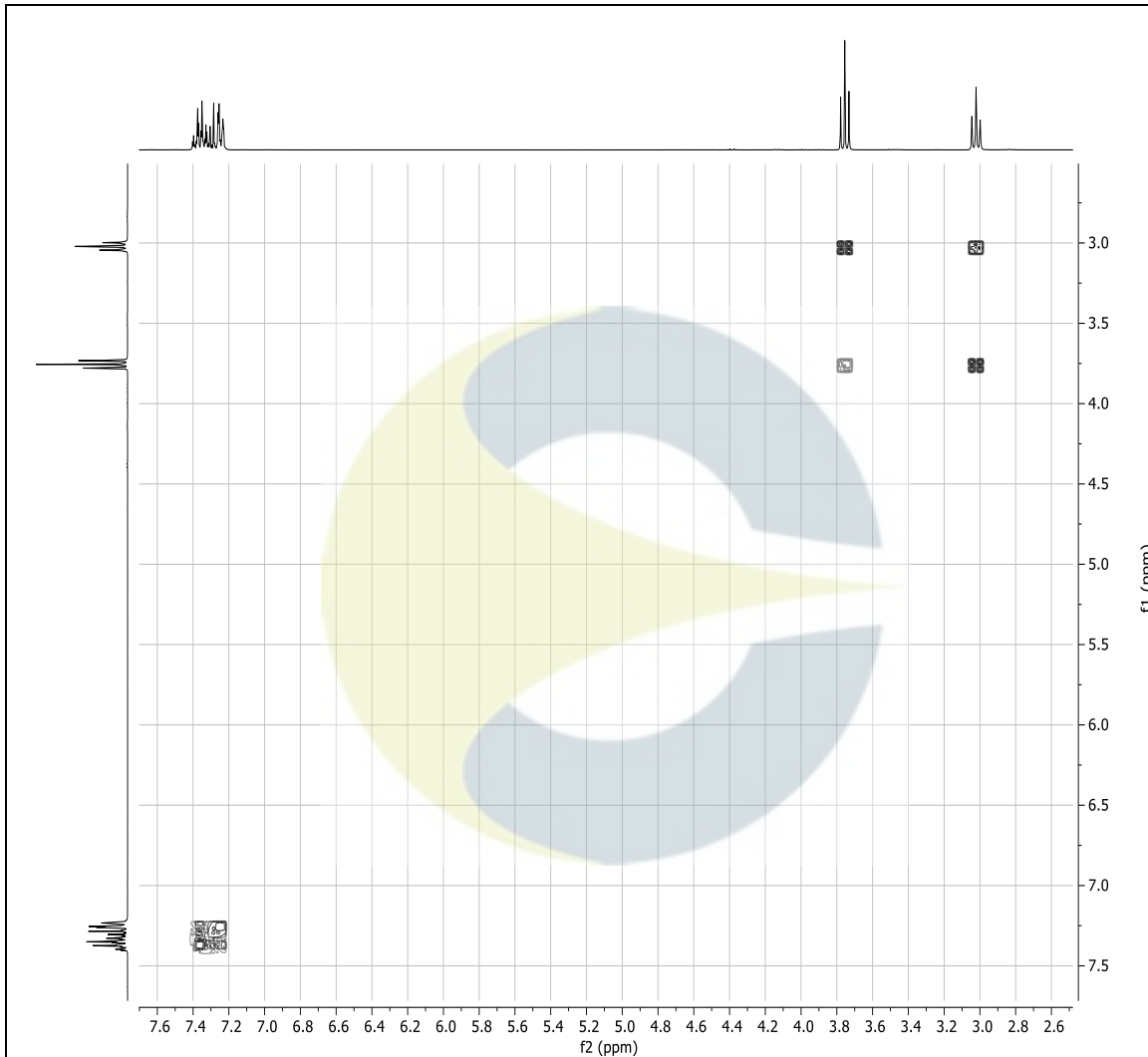
**<sup>1</sup>H-NMR SPECTRUM OF PHENYLETHYL ISOTHIOCYANATE (CDXP-19-00644) IN CDCl<sub>3</sub>**



**<sup>13</sup>C-NMR SPECTRUM OF PHENYLETHYL ISOTHIOCYANATE (CDXP-19-00644) IN CDCl<sub>3</sub>**



This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.

**COSY-NMR SPECTRUM OF PHENYLETHYL ISOTHIOCYANATE (CDXP-19-00644) IN CDCl<sub>3</sub>**

**REVISION HISTORY**

<u>Revision History</u>	<u>Date of Revision</u>	<u>Document/Changes</u>
00	11/22/2019	New report

This document is the property of ChromaDex, Inc. and/or its relevant affiliates and contains confidential and proprietary material for the sole use of the intended recipient(s). Any review, use, distribution or disclosure by or to others is strictly prohibited.