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Accreditation Number 20126

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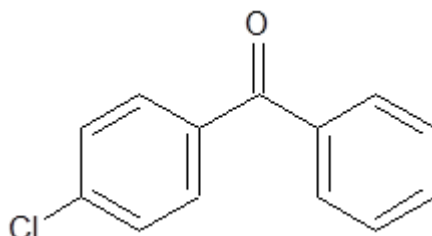
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Reference Material Product Information Sheet

Epichem's Quality System conforms to ISO9001:2015 as certified by ECAAAS Pty Ltd - Certification number 616061.



Name	4-Chlorobenzophenone
BP/EP Name	Not applicable
USP Name	Not applicable
Synonym(s)	(4-chlorophenyl)phenyl-methanone; p-Chloro-benzophenone
Epichem Item #	EPL-AA280 Batch 1
CAS #	134-85-0
Molecular Formula	C ₁₃ H ₉ ClO
Molecular Weight	216.67 g/mol
Appearance	White powder
Melting Point	75.3-76.7°C
Combustion Analysis	Required (%): C:72.0; H:4.2; N:0.0. Found (%): C:71.9; H:4.2; N:<0.3.
Purity*	99.8%
Date of Manufacture	18 May 2021
Storage Requirements	Protect from heat, light and moisture.
Special Precautions	This compound is for laboratory use only. Its toxicological properties may not have been fully established. It should be handled only by suitably qualified personnel.
Intended Use	This compound is suitable for the identification of impurities and degradants in pharmaceutical materials. The purity assay is considered as relative contribution.
Date of Shipment	TBA This certificate is valid for one year from the date of shipment provided the substance is unopened and stored under the recommended conditions.
Retest Date	TBA (Proper Storage and Handling Required)

* NATA accreditation does not cover the performance of this service

EPL-AA280 Batch 1

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www.epichem.com.au

ABN 80 106 769 902

I. Identity

The identity of this product was established using the following analyses:

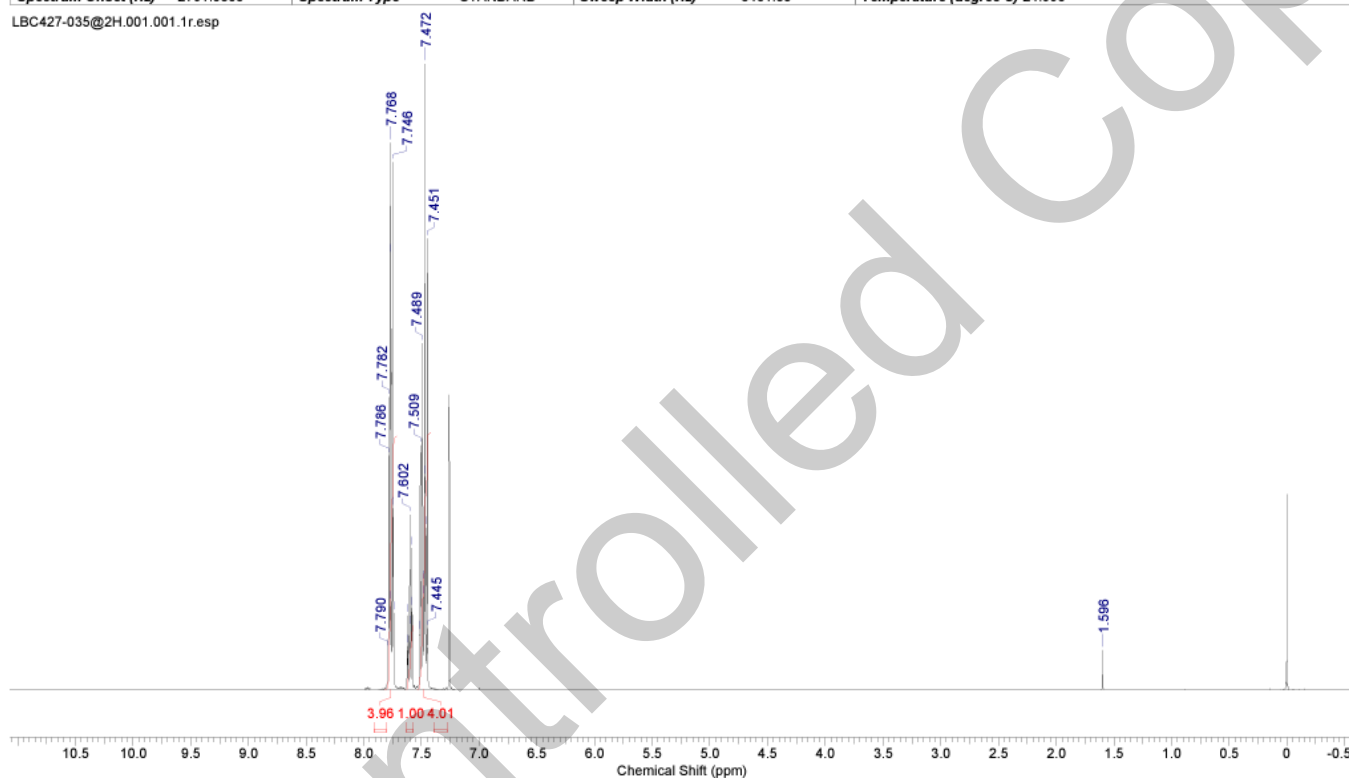
Ia. ¹H NMR Spectrum

Conditions: 400 MHz, CDCl₃

¹H NMR spectrum consistent with chemical structure.

Acquisition Time (sec)	3.7547	Comment	LBC427-035@2H 1H CDCl3 (E:\dataexternal\epichem) cygoh 3	Date	11 May 2021 16:57:36		
Date Stamp	11 May 2021 16:57:36	File Name	\naphthalene\company\NMR files\LBC427\LBC427-035@2H\1\pdata\1\1r				
Frequency (MHz)	400.13	Nucleus	1H	Number of Transients	8	Origin	spect
Original Points Count	24038	Owner	nmr	Points Count	32768	Pulse Sequence	zg
Receiver Gain	114.00	SW(cyclical) (Hz)	6402.05	Solvent	CHLOROFORM-d		
Spectrum Offset (Hz)	2791.0300	Spectrum Type	STANDARD	Sweep Width (Hz)	6401.85	Temperature (degree C)	24.996

LBC427-035@2H.001.001.1r.esp



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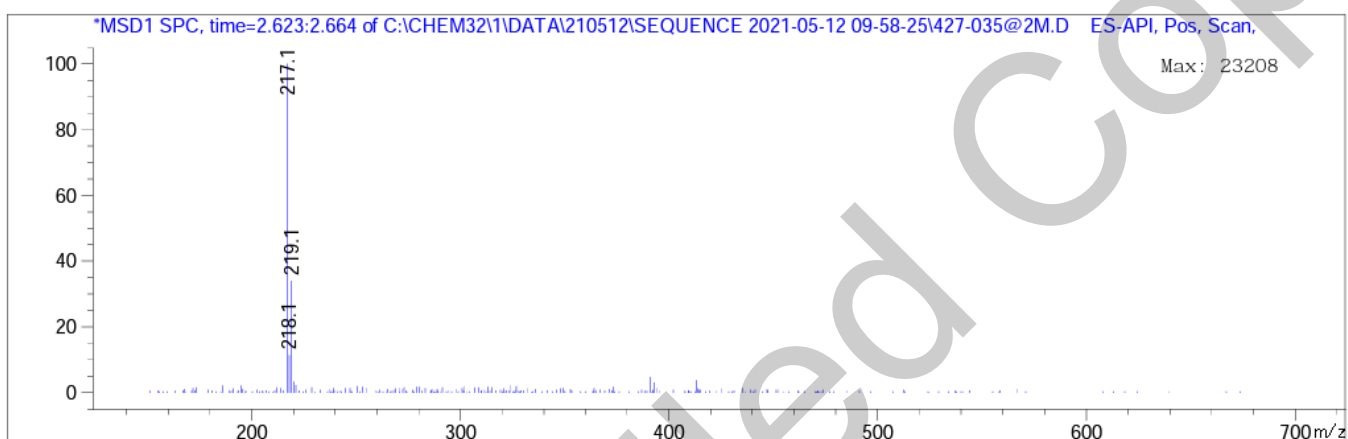
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Ib. Mass Spectrum

The mass spectrum of this material was analysed by Liquid Chromatography Mass Spectroscopy (LCMS) using in-house EM005.WI08.

Method: ACN/water gradient (+ 0.1% formic acid).
ZORBAX SB-C8, 4.6 x 30 mm, 3.5 micron.

Retention Time (MS)	MS Area	Mol. Weight or Ion
2.643	318059	219.05 I 218.10 I 217.10 I



Theoretical values: 217.1 [M+H]⁺.

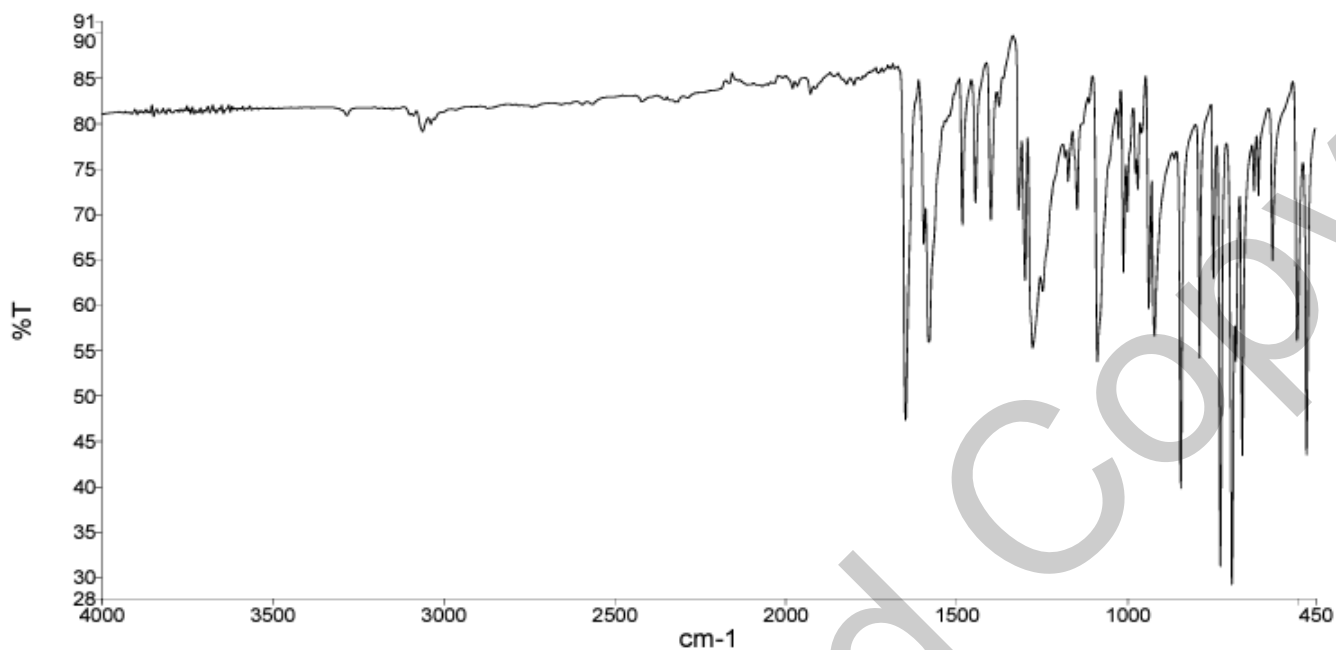
The signal of the Mass Spectrum is consistent with the theoretical value and its interpretation is consistent with the structural formula.

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Ic. IR Spectrum

The infra-red spectrum of this material was analysed by Fourier-Transform Infrared Spectroscopy (FTIR) using in-house EM005.WI09.



The interpretation of the signals of the Fourier-Transform Infrared Spectrum is consistent with the structural formula.

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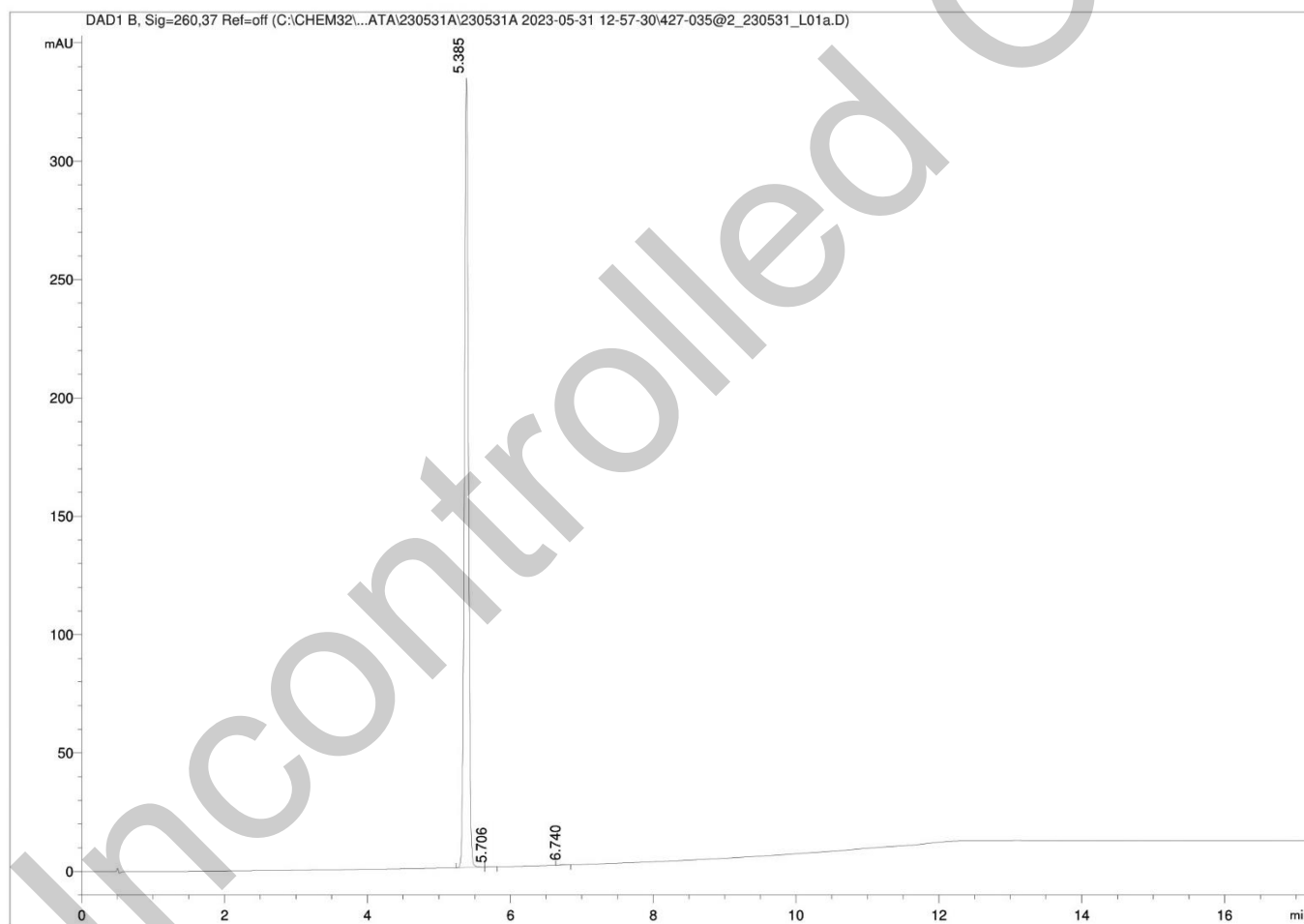
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II. Purity

The purity of this material was analysed by high performance liquid chromatography (HPLC) using in-house EM005.WI07.

HPLC Conditions:

Column	Conditions				Detector	Injector
Agilent Poroshell 120 EC-C18 4.6 x 50mm 2.7 micron	25°C				DAD 260nm	Auto 1.0 µL 0.3 mg/mL in 100% acetonitrile (NO MODIFIERS)
	Time (min)	% Line A (Water + 0.1% (v/v) TFA)	% Line B (Acetonitrile + 0.1% (v/v) TFA)	Flow rate (mL/min)		
	0.00	60	40	1.0		
	11.00	5	95	1.0		
	16.00	5	95	1.0		
	17.00	60	40	1.0		
	20.00	60	40	1.0		
	0.00	60	40	1.0		



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Area Percent Report – Sorted by Signal

Peak Number	Retention Time (rounded)	Area	Area % (rounded)
1	5.39	1327.06	99.85
2	5.71	0.58	0.04
3	6.74	1.41	0.11
Totals			100 (rounded)

For the calculation the system peaks were ignored. The content of the analyte was determined as a ratio of the peak area of the analyte and the cumulative areas of the purities, added up to 100%.

Results:

Average 99.9% (average of 10 duplicate runs)

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III. Water Content

Method: Karl-Fischer titration using in-house EM005.WI04.

Results:

Average 0.1%

IV. Ash Content

Method: BP 2021 Appendix XI J. Ash Method II

Result:

Contains <0.1% ash.

V. Residual Solvents

Method: ¹H NMR

Result:

No significant impurities detected by ¹H NMR analysis.

VI. Final Result

Chromatographic purity (HPLC)	99.9%
Water content	0.1%
Ash content	<0.1%
Residual solvents	<0.1%
Purity*	99.8%

This purity is assessed to be 99.8%.

Product Reviewed By:

Product Released By:

James Rixson, PhD
Head of Production

Carol Worth, PhD
Quality Manager

Release Date: 2 June 2023

*NATA accreditation does not cover the performance of this service.

The calculation of the purity follows the formula:

$$\text{Purity(\%)} = \frac{((\text{Chromatographic purity[HPLC]}) \times (100 - (\text{water content} + \text{ash content} + \text{volatile contents})))}{100}$$

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