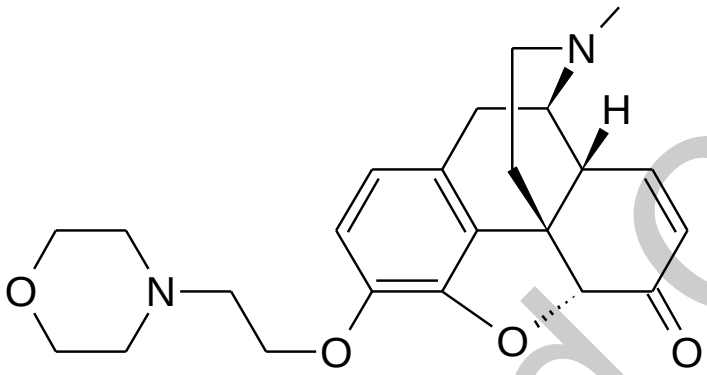
Our Formula. Your Success.

Reference Material Product Information Sheet

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



Name	pholcodinone
Epichem Item #	EPL-AA90 Batch 6
CAS #	2575516-55-9
Molecular Formula	$C_{23}H_{28}N_2O_4$
Molecular Weight	396.49 g/mol
Appearance	Off-white solid
Melting Point	135.7-141.1°C (decomposition)
Combustion Analysis	Required (%): C:69.7; H:7.1; N:7.1 Found (%): C:69.3; H:7.2; N:6.9.
Purity	98.3%
Date of Manufacture	25 July 2019
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 stored under the recommended conditions.
Retest Date	TBA (Proper Storage and Handling Required)

Epichem Pty Ltd, Suite 5, 3 Brodie-Hall Drive, Bentley WA 6102, Australia
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I. Identity

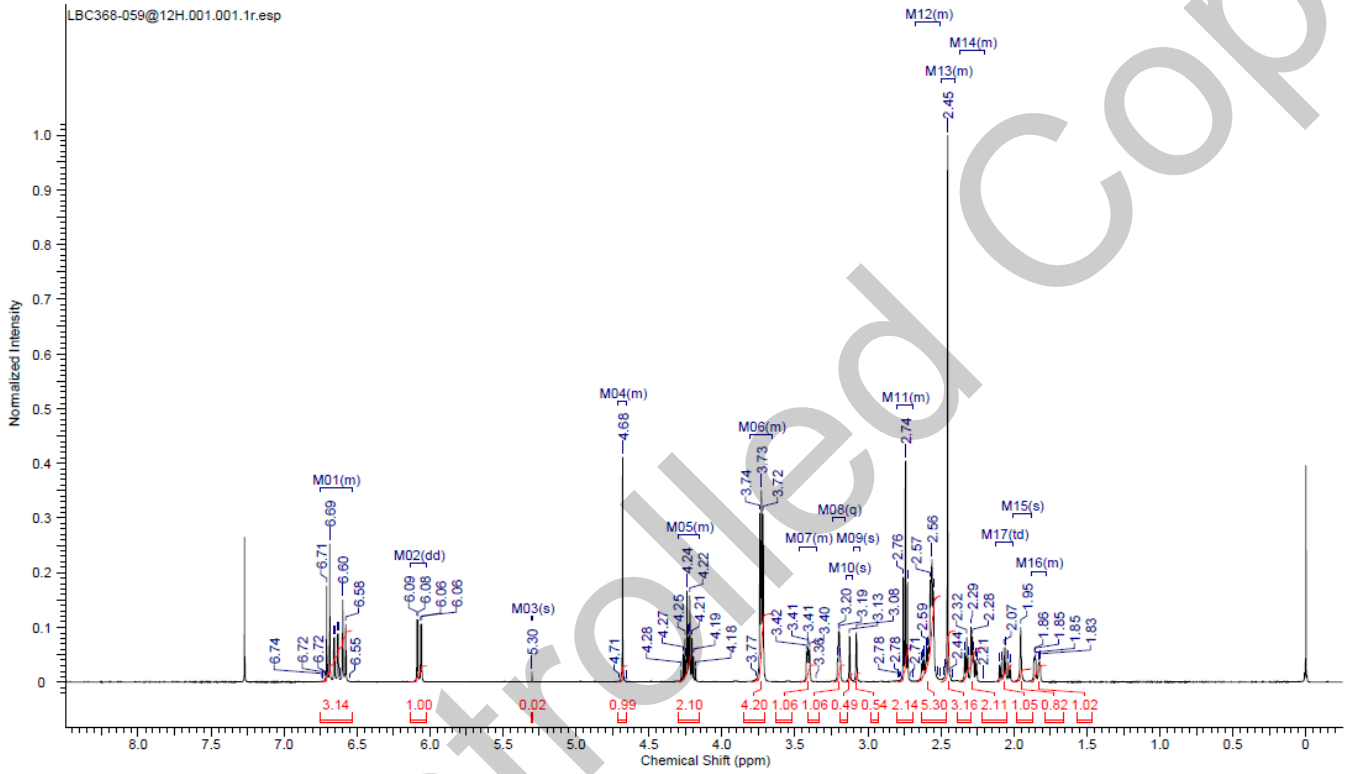
The identity of this product was established using the following analyses:

Ia. ^{1}HNMR Spectrum

Conditions: 400 MHz, $CDCl_3$

^{1}HNMR spectrum consistent with chemical structure.

Acquisition Time (sec)	3.7547	*Comment*	LBC368-059@12H 1H CDCl3 {E:\dataexternal\epichem} cyqoh 7	*Date*		27 Jun 2019 17:18:56	
Date Stamp	27 Jun 2019 17:18:56			*File Name*	\\naphthalene\company\NMR files\LBC368\LBC368-059@12H\1\pdata\1\1r		
Frequency (MHz)	400.13	*Nucleus*	1H	*Number of Transients*	16	*Origin*	spect
Original Points Count	24038	*Owner*	nmr	*Points Count*	32768	*Pulse Sequence*	zg
Receiver Gain	80.60	*SW(cyclical) (Hz)*	6402.05	*Solvent*	CHLOROFORM-d		
Spectrum Offset (Hz)	2794.7676	*Spectrum Type*	STANDARD	*Sweep Width (Hz)*	6401.85	*Temperature (degree C)*	24.996



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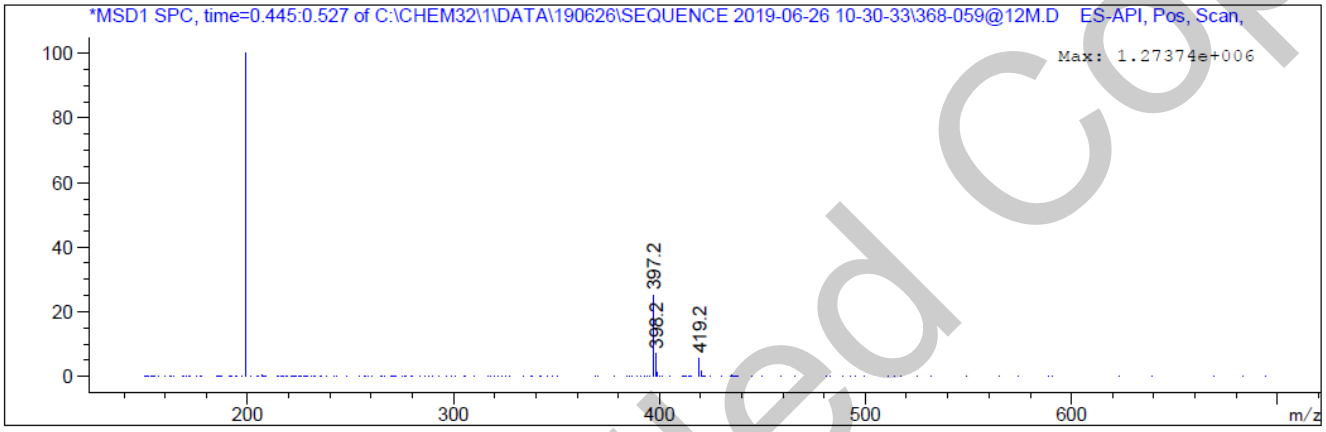
Ib. Mass Spectrum

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
0.470	16287605	419.20 I
		398.20 I
		397.20 I



Theoretical value: 397.2 [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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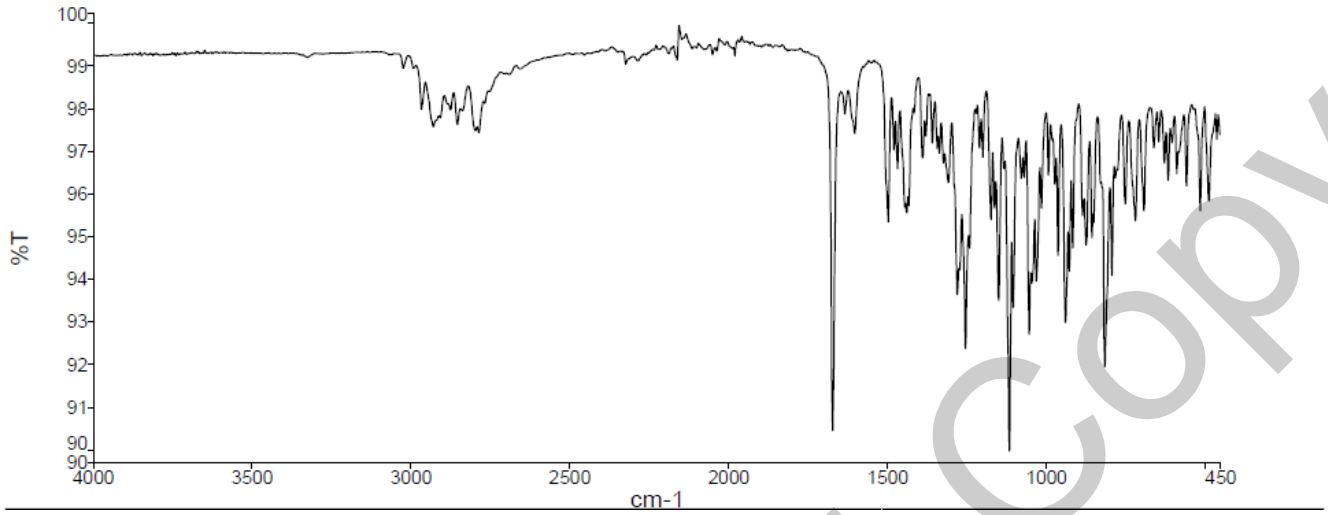
Ic. IR Spectrum

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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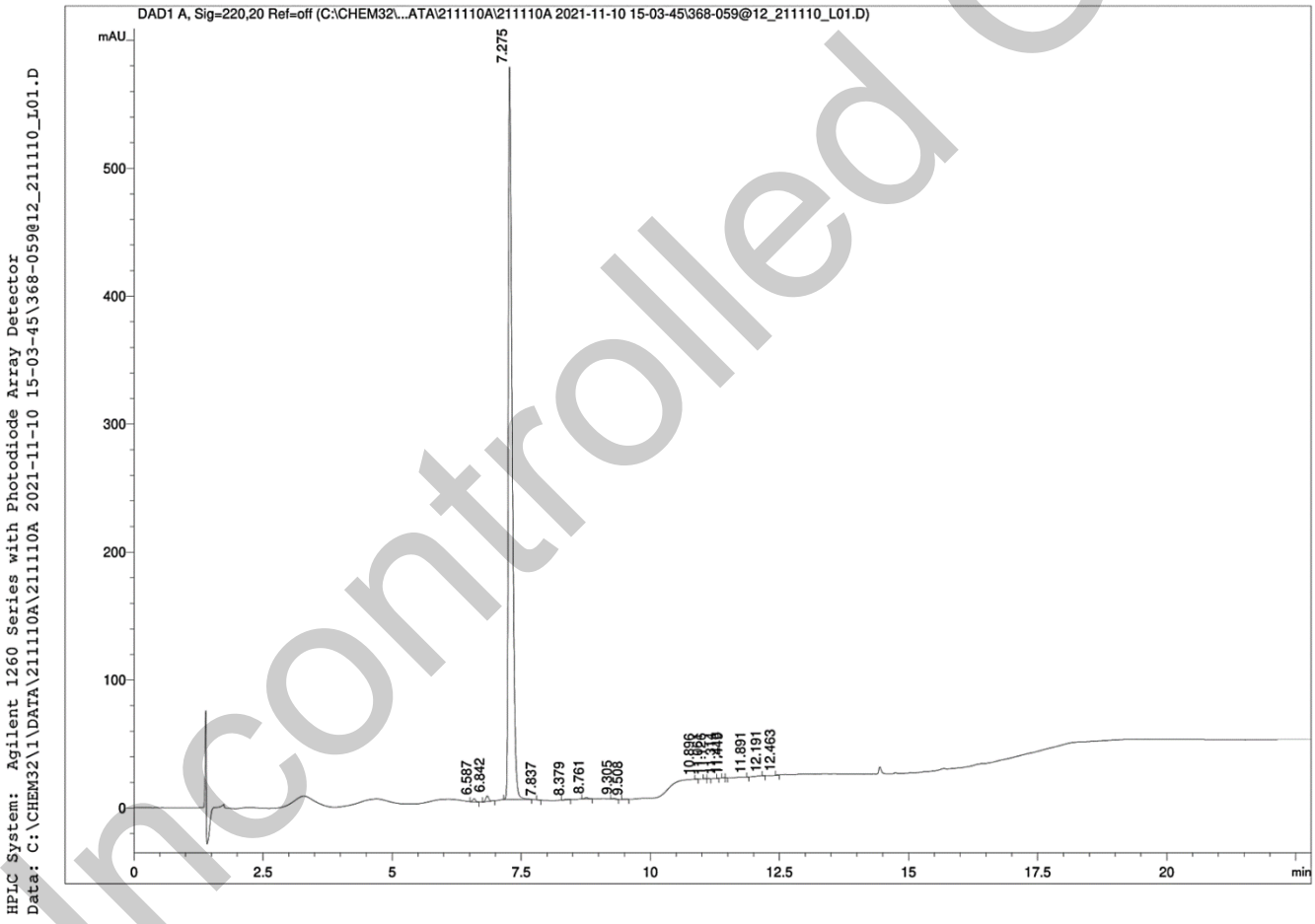
II. Purity

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

HPLC Conditions:

Column	Conditions				Detector	Injector
Fortis H2o 4.6 x 100mm 3 micron	25ºC				DAD 220nm	Auto 1.0 µL 1.1 mg/mL in 100% methanol (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	98	2	1.0		
	8.00	86	14	1.0		
	16.10	5	95	1.0		
	21.10	5	95	1.0		
	22.10	98	2	1.0		
	28.10	98	2	1.0		



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Area Percent Report – Sorted by Signal

Peak Number	Retention Time (rounded)	Area	Area % (rounded)
1	6.59	9.42	0.32
2	6.84	17.48	0.59
3	7.28	2937.57	98.66
4	7.84	0.22	0.01
5	8.38	2.11	0.07
6	8.76	4.64	0.16
7	9.31	2.73	0.09
8	9.51	0.61	0.02
9	10.90	0.28	0.01
10	11.06	0.42	0.01
11	11.13	0.44	0.01
12	11.31	0.07	0.00
13	11.42	0.83	0.03
14	11.45	0.18	0.01
15	11.89	0.04	0.00
16	12.19	0.09	0.00
17	12.46	0.47	0.02
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 98.7% (average of duplicate runs)

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III. Water Content

Method: Karl-Fischer titration using in-house EM005.WI04.
Results:
Average 0.2%

IV. Ash Content

Method: BP 2019 Ash (Appendix XI J) Method II
Result:
Contains <0.1% ash.

V. Residual Solvents

Method: ^{1}HNMR
Result:
0.2% dichloromethane by 1H NMR analysis.

VI. Final Result

Chromatographic purity (HPLC)	98.7%
Water content	0.2%
Ash content	<0.1%
Residual solvents	0.2%
Purity	98.3%

This purity is assessed to be 98.3%.

Product Reviewed By:

James Rixson, PhD
Head of Production

Product Released By:

Carol Worth, PhD
Quality Manager
Release Date: 16 November 2021

The calculation of the purity follows the formula:

$$\text{Purity}(\%) = \frac{((\text{Chromatographicpurity[HPLC]})x(100 - (\text{watercontent} + \text{ashcontent} + \text{volatilecontents})))}{100}$$

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