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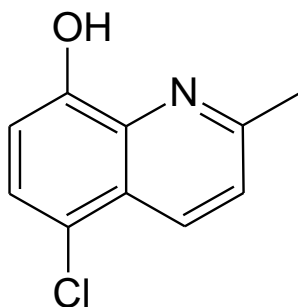
The results of the tests, calibrations and/or measurements included in this document are traceable to Australia/national standards.  
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## Reference Material Product Information Sheet

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



<b>Name</b>	5-chloro-2-methylquinolin-8-ol
<b>Synonym(s)</b>	5-chloro-8-hydroxyquinaldine; 5-chloro-8-hydroxy-2-methylquinoline; 5-chlor-2-methyl-8-chinolinol; 5-chlor-8-hydroxy-chinaldin
<b>Epichem Item #</b>	EPL-AA121 Batch 2
<b>CAS #</b>	24263-93-2
<b>Molecular Formula</b>	C <sub>10</sub> H <sub>8</sub> ClNO
<b>Molecular Weight</b>	193.63 g/mol
<b>Appearance</b>	Beige crystalline powder
<b>Melting Point</b>	65.5-66.7°C
<b>Combustion Analysis</b>	Required (%): C:62.0; H:4.2; N:7.2. Found (%): C:62.0; H:4.1; N:7.2.
<b>Purity*</b>	99.7%
<b>Date of Manufacture</b>	17 August 2016
<b>Storage Requirements</b>	Protect from heat, light and moisture.
<b>Special Precautions</b>	<b>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.</b>
<b>Intended Use</b>	This compound is suitable for the identification of impurities and degradants in pharmaceutical materials. The purity assay is considered as relative contribution.
<b>Date of Shipment</b>	TBA This certificate is valid for one year from the date of shipment provided the substance is unopened and stored under the recommended conditions.
<b>Retest Date</b>	TBA (Proper Storage and Handling Required)

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

EPL-AA121 Batch 2

Epichem Pty Ltd, Suite 5, 3 Brodie-Hall Drive, Bentley WA 6102, Australia  
Tel + 61 (0)8 6167 5200 Fax + 61 (0)8 6167 5201 www.epichem.com.au ABN 80 106 769 902

## I. Identity

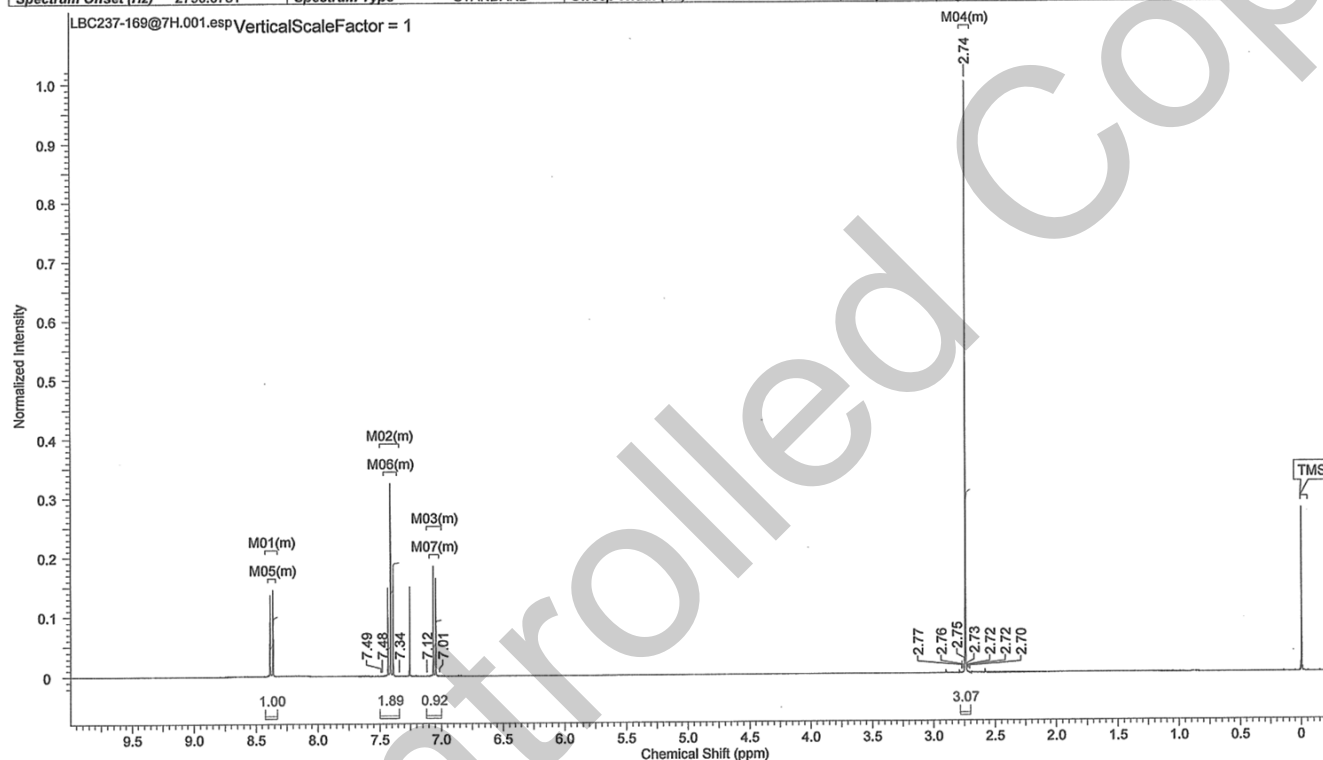
The identity of this product was established using the following analyses:

### Ia. <sup>1</sup>HNMR Spectrum

Conditions: 400 MHz, CDCl<sub>3</sub>

<sup>1</sup>HNMR spectrum consistent with chemical structure.

Acquisition Time (sec)	3.7547	Comment	LBC237-169@7H 1H CDCl3 (E:\data\external\epichem) cygoh 5	Date	03 Aug 2016 17:04:00		
Date Stamp	03 Aug 2016 17:04:00	File Name	\\NAPHTHALENE\Company\NMR files\LBC237\LBC237-169@7H1.fid				
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	128.00	SW(cyclical) (Hz)	6402.05	Solvent	CHLOROFORM-d		
Spectrum Offset (Hz)	2790.0781	Spectrum Type	STANDARD	Sweep Width (Hz)	6401.85	Temperature (degree C)	26.945



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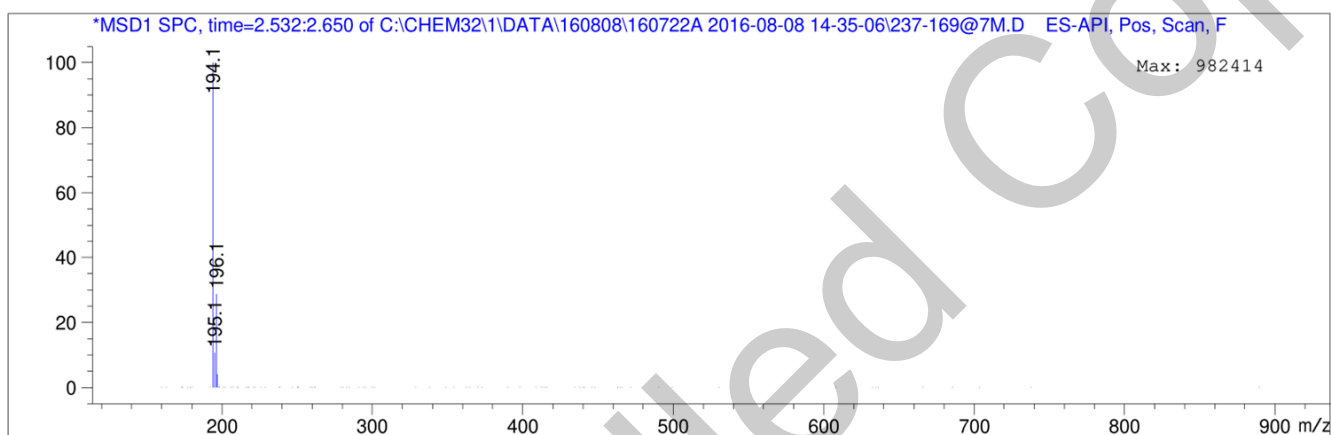
ABN 80 106 769 902

## Ib. Mass Spectrum

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

Method: 5% to 100% ACN in water gradient (+0.1% formic acid)  
Poroshell 120 EC-C18, 4.6 x 50 mm, 2.7 micron

Retention Time (MS)	MS Area	Mol. Weight or Ion
2.567	19289028	196.10 I
		195.10 I
		194.10 I



Theoretical value: 194.1 [M+H]<sup>+</sup>.

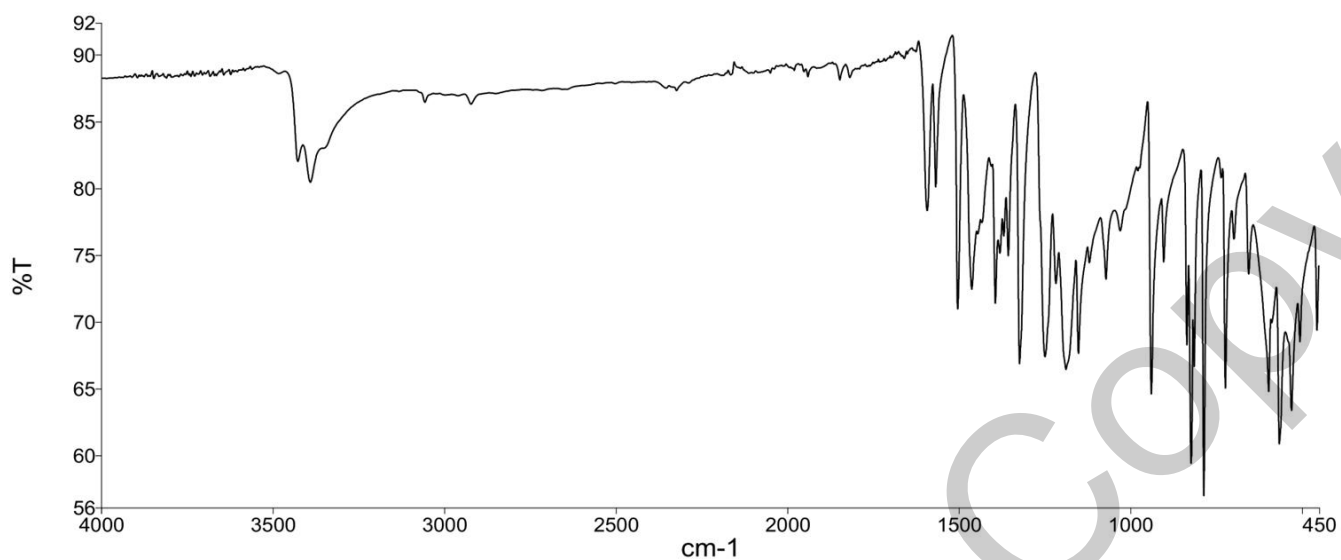
The signal of the Mass Spectrum is consistent with the theoretical value and its interpretation is consistent with the structural formula.

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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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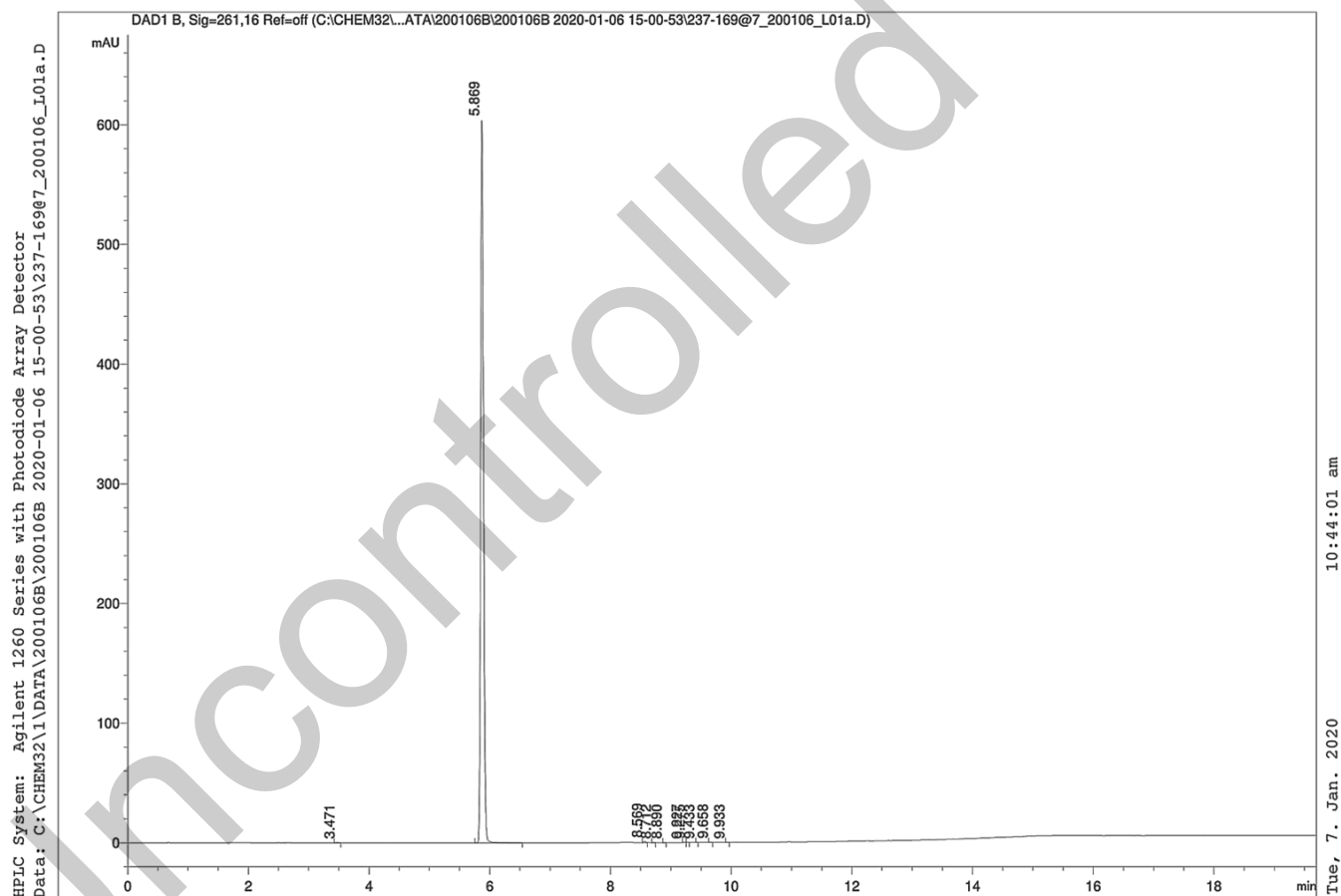
Epicchem Pty Ltd, Suite 5, 3 Brodie-Hall Drive, Bentley WA 6102, Australia  
Tel + 61 (0)8 6167 5200 Fax + 61 (0)8 6167 5201 www.epicchem.com.au ABN 80 106 769 902

## 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 261nm	Auto 1.0 µL 0.15 mg/mL in water (+0.1% TFA)
	Time (min)	% Line A (Water + 0.1% (v/v) TFA)	% Line B (Acetonitrile + 0.1% (v/v) TFA)	Flow rate (mL/min)		
	0.00	95	5	1.0		
	6.00	80	20	1.0		
	13.50	5	95	1.0		
	18.50	5	95	1.0		
	19.50	95	5	1.0		
	22.50	95	5	1.0		



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### Area Percent Report – Sorted by Signal

Peak Number	Retention Time (rounded)	Area	Area % (rounded)
1	3.47	0.66	0.03
2	5.87	1971.09	99.84
3	8.57	1.86	0.09
4	8.71	0.08	0.00
5	8.89	0.05	0.00
6	9.23	0.10	0.00
7	9.27	0.10	0.01
8	9.43	0.03	0.00
9	9.66	0.23	0.01
10	9.93	0.05	0.00
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 99.8% (average of 10 duplicate analyses)

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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 2016 Ash (Appendix XI J) as per WS001/C29155

#### Result:

Contains <0.1% ash.

### V. Residual Solvents

Method: <sup>1</sup>HNMR

#### Result:

No significant impurities detected by <sup>1</sup>H NMR analysis.

### VI. Final Result

Chromatographic purity (HPLC)	99.8%
Water content	0.1%
Ash content	<0.1%
Residual solvents	<0.1%
Purity*	99.7%

This purity is assessed to be 99.7%.

Product Reviewed By:

Product Released By:

James Rixson, PhD  
Head of Fine Chemicals & Technical Services

Boon Tan  
Quality Manager

Release Date: 7 January 2020

\*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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