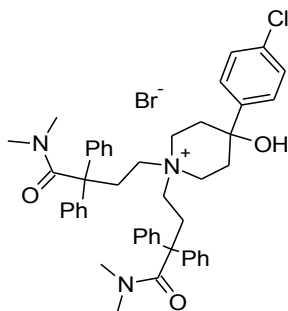


Certificate of Analysis

*Revised 11 August 2017

Structure:



Name	4-(4-chlorophenyl)-1,1-bis((4-dimethylamino)-4-oxo-3,3-diphenylbutyl)-4-hydroxypiperidinium bromide
BP Name	Loperamide Impurity B
Synonym(s)	Loperamide Impurity B bromide
Epichem Item #	EPL-AA157 Batch 1
CAS #	Not available
Molecular Formula	C ₄₇ H ₅₃ BrClN ₃ O ₃
Molecular Weight	823.32 g/mol
Purity	98.8% (weight/weight)* 100% at 220 nm by HPLC (assuming all components detected with the same response factor). ¹ H NMR analysis showed no significant impurities. 1.10% water by Karl-Fischer method.* 0.07% ash.
Combustion Analysis	Required (%): C:68.6; H:6.5; N:5.1. Found (%): C:67.8; H:6.37; N:5.1.
Appearance	White powder
Melting Point	216.1-218.3°C*
Date of Manufacture	1 December 2014
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.

John Moursounidis, PhD
Head Fine Chemicals and Technical Services
11 August 2017