

## CERTIFICATE OF ANALYSIS

Material No:	183785	Manufacturing date:	09-Jun-2019
Name:	Nicotine	Retest date:	09-Jun-2023
Quality:	USP/Ph.Eur.	Specification date:	02-May-2019
Lot No:	1923I002		
CAS No.	54-11-5		
Formula:	C10H14N2		
Molecular Weight:	162.2		

Test	Method	Specification	Result
Description	BE-183785	colourless to yellow or brownish liquid	Complies
IR-Spectrum	IR-183785	in accordance with the standard spectrum	Complies
Clarity of solution	KLB-183785	NMT 3 FTU ; clear (10 % mV in water)	1 FTU
Colour of solution	FAB-183785	NLT 5 on scale BY, Y or R (10 % mV in water)	7
Specific rotation	SDB-183785	-143 -- -130 ° at 25°C in ethanol 96 % (calculated on the anhydrous basis)	-135 °
	SDC-183785	-152 - -140 ° in ethanol abs. (calculated on the anhydrous basis)	-142 °
Arsenic	GPAS-183785	NMT 2 ppm	<1 ppm
Cadmium	PLCD-183785	NMT 0.5 ppm	<0.2 ppm
Heavy metals (Pb)	SM-183785	NMT 20 ppm	<10 ppm
Water (KF)	KF-183785	NMT 0.5 %	0.0 %
Assay (Non-aqu. titr.)	TIG-183785	99.0 - 101.0 % (calculated on the anhydrous basis)	100.2 %
Identity (HPLC)	LCV-183785	the retention time of the major peak corresponds to that of the reference	Complies
Related substances (HPLC)	LCV-183785	NMT 0.15 % cotinine	<0.06 %
	LCV-183785	NMT 0.15 % myosmine	<0.06 %
	LCV-183785	NMT 0.15 % nicotine N-oxide	<0.06 %
	LCV-183785	NMT 0.15 % nornicotine	<0.06 %
	LCV-183785	NMT 0.15 % anatabine	<0.06 %
	LCV-183785	NMT 0.10 % β-nicotyrine	<0.06 %
	LCV-183785	NMT 0.10 % anabasine	<0.06 %
	LCV-183785	NMT 0.10 % greatest unknown impurity (no unknown impurity greater than 0.10 %)	<0.06 %
Residual solvent	LCV-183785	NMT 0.8 % sum of impurities	<0.1 %
	GCH-183785	NMT 500 ppm cyclohexane	19 ppm

---

**CERTIFICATE OF ANALYSIS**

Material No:	<b>183785</b>		
Name:	<b>Nicotine</b>		
Quality:	<b>USP/Ph.Eur.</b>		
Lot No:	<b>19231002</b>	Manufacturing date:	<b>09-Jun-2019</b>
CAS No.	<b>54-11-5</b>	Retest date:	<b>09-Jun-2023</b>
Formula:	<b>C10H14N2</b>	Specification date:	<b>02-May-2019</b>
Molecular Weight:	<b>162.2</b>		

---

Release comment: **meets specification**

I hereby certify that the above information is authentic and accurate. This batch of product has been fabricated/manufactured including packaging and quality control in compliance with GMP requirements.

Released On: **27-Jun-2019**  
on behalf of Siegfried Ltd

Released By: **J. Bobst**  
Quality Assurance

This certificate of analysis is signed electronically.  
It has been created automatically by the validated Siegfried Laboratory Information Management System (LIMS)