

Total Alkaloids (As Nicotine) in Tobacco by Segmented Flow Analysis (SFA)

FOOD & BEVERAGE SERIES

Cartridge Part Number: 331656CT
Channel Part Number: 331655

Scope and Application

This method is used for the determination of total alkaloids (as nicotine) in tobacco extracts. The Method Detection Limit (MDL) of this method is 1.19 mg/L. The applicable range of the method is 5.0 - 200 mg/L. The range may be extended to analyze higher concentrations by sample dilution.

Method Performance

Range	5.0 - 200 mg/L
Rate	40 samples/hour
Precision	<2% RSD at mid-point range
Method Detection Limit (MDL)	1.19 mg/L

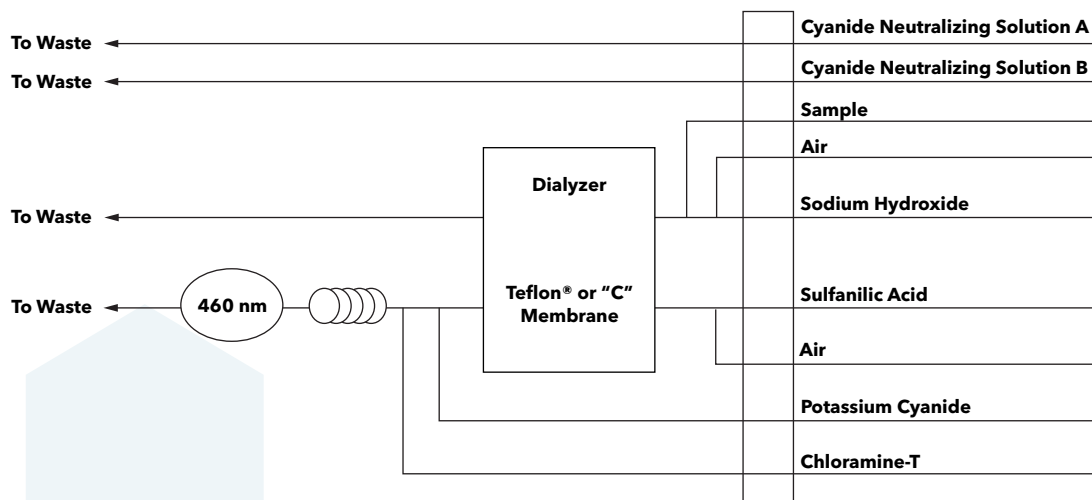


Figure 1.

Reagents and Calibrants

Chemical Name	CAS #	Chemical Formula	Part Number	Used in Prep Guide
Acetic Acid, glacial	64-19-7	CH ₃ COOH		Appendix A
Brij®-35, (21% Solution)	9002-92-0		326126	Appendix A
Chloramine-T Trihydrate	7080-50-4	CH ₃ C ₆ H ₄ SO ₂ NNaCl•3H		Appendix A
Citric Acid, anhydrous	77-92-9	H ₃ C ₆ H ₅ O ₇		
Citric Acid Monohydrate	5949-29-1	H ₃ C ₆ H ₅ O ₇ •H ₂ O		Appendix A
Deionized Water (ASTM Type I or II)				Appendix A
Iron (II) Sulfate Heptahydrate	7782-63-0	FeSO ₄ •7H ₂ O		Appendix A
Nicotine	54-11-5	C ₁₀ H ₁₄ N ₂		Appendix A
Potassium Cyanide	151-50-8	KCN		Appendix A
Sodium Carbonate, anhydrous	497-19-8	Na ₂ CO ₃		Appendix A
Sodium Hydroxide	1310-73-2	NaOH		Appendix A
Sodium Phosphate Dibasic	7558-79-4	Na ₂ HPO ₄		Appendix A
Sulfanilic Acid	121-57-3	H ₂ NC ₆ H ₄ SO ₃ H		Appendix A

Summary of Method

- The aqueous extract of tobacco is reacted with buffered sulfanilic acid and cyanogen chloride to form a polymethine dye. The cyanogen chloride is generated online by combining potassium cyanide and chloramine-T. The resulting color is measured at 460 nm.¹
- The quality of the analysis is assured through reproducible calibration and testing of the Segmented Flow Analysis (SFA) system.
- A general flow diagram of the SFA system is shown in Figure 1.

Interferences

- No chemical interferences are known.

Figure 3. Total Alkaloids (As Nicotine) in Tobacco by SFA Calibration Series

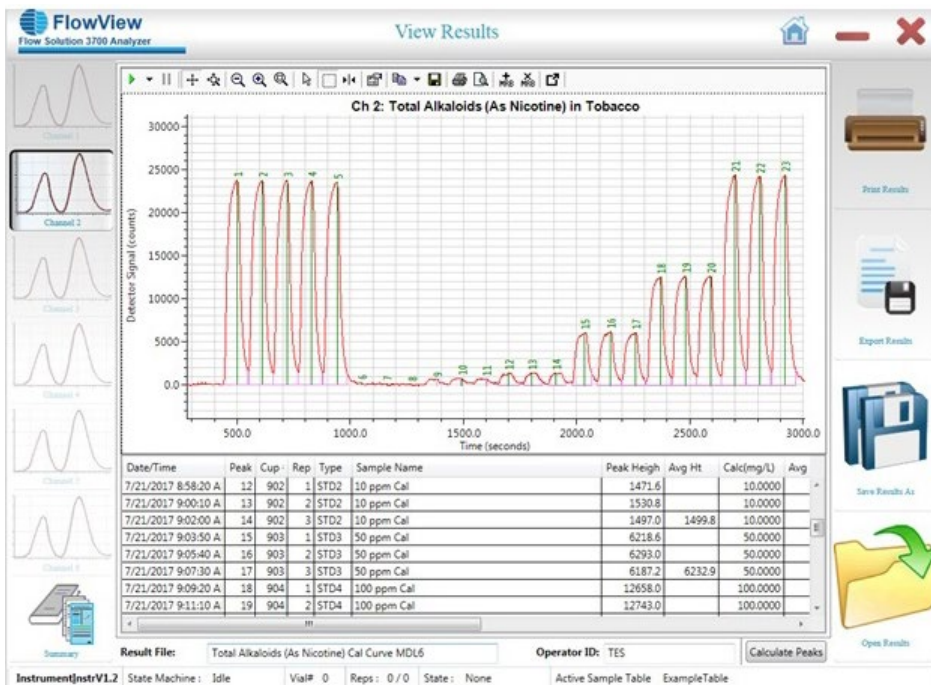
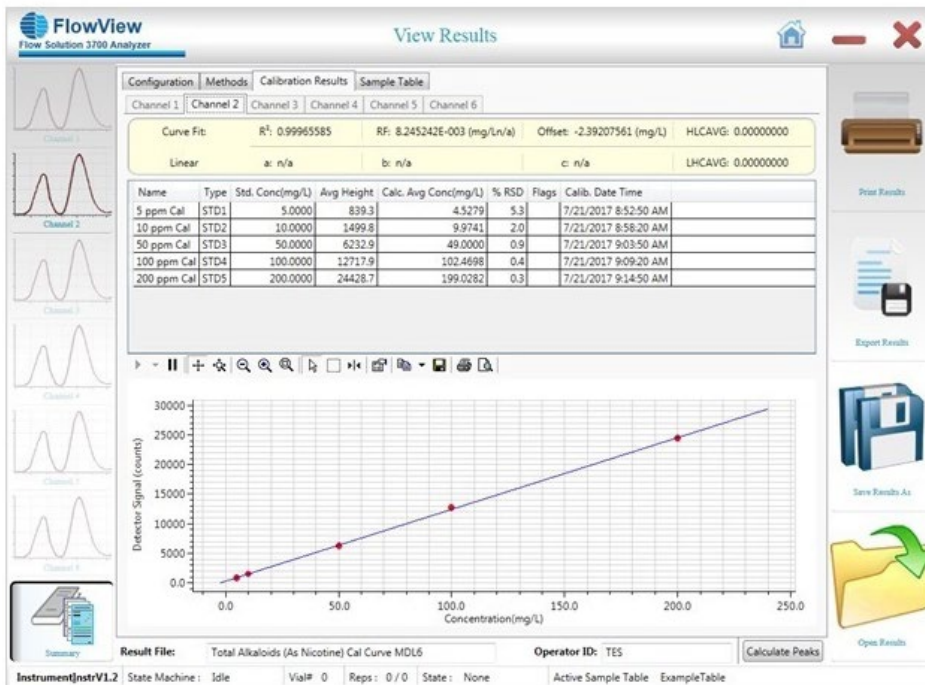


Figure 4. Total Alkaloids (As Nicotine) in Tobacco Calibration Curve and Statistics



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