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List of compendial methods

Thermo Scientific Charged Aerosol Detectors

Charged aerosol detection is a reliable technology that will change the way you view every sample. Charged Aerosol Detector (CAD) can detect all non-volatile, and many semi-volatile analytes, with uniform response.

Charged aerosol detection can be used for the analysis of pharmaceuticals (large and small molecule), biomolecules, foods and beverages, specialty chemicals, and polymers.

The following section gives examples of standardized methods - e.g. United States Pharmacopeia (USP), European Pharmacopeia (EP), and International Organization for Standardization (ISO) - using charged aerosol detection technology.





Analytes	Method Reference	Organization	Matrix	Column	Mobile Phase	Gradient or Isocratic	Status	Additional Information
Triton X-100, octylphenol ethoxylates (CAS 9002-93-1) IGEPAL CO-630, nonylphenol ethoxylates (CAS 68412-54-4)	ISO 18254-2:2018 Method for the detection and determination of alkylphenol ethoxylates (APEO) - Part 2: Method using NPLC	ISO	Textiles	Normal phase (NP) applying two columns: 1) C18 column, 4.6 x 50 mm, 1.7 µm 2) hydrogen bond adsorption, 4.6 x 150 mm, 3 µm	A) acetonitrile with 0.1% formic acid B) methanol with 0.1% formic acid and 0.01% ammonium formate	Gradient	In official text	Appslab Library
PEG with molecular mass greater than 400 g/mol	ISO 16560:2015(en) Surface active agents — Determination of polyethylene glycol content in nonionic ethoxylated surfactants — HPLC method	ISO	Nonionic ethoxylated surfactants that are soluble in methanol or methanol/water/H ₂ O and have [PEG]>0.1%	Reversed phase (RP) C18, 4.6 x 250 mm, 5 µm	A) water B) methanol	Gradient	In official text	Surfactants Application Notebook
Deoxycholic acid powder	Deoxycholic (desoxycholic) acid - since USP 40 NF 35 S1	USP	None	Type L1, Thermo Scientific™ Acclaim™ 120 C18, 4.6 x 150 mm, 3 µm (P/N 059133)	A) 0.1% formic acid in water B) 0.1% formic acid in acetonitrile	Gradient	In official text	Appslab Application Note
Metoprolol succinate powder	Content of metoprolol related compound H and metoprolol related compound I, USP 41(3) In-Process Revision: Metoprolol succinate. Proposed change to United States Pharmacopeia and National Formulary USP 38-NF33;	USP	None	Hydrophilic interaction liquid chromatography (HILIC) solid core silica gel with five hydroxyl bonded ligands, 4.6 x 150 mm, 5 µm	85% acetonitrile 15% 0.1 M ammonium formate in water, pH 3.2	Isocratic	In process / under consideration	Application Note Appslab Library
Gadobutrol monohydrate	Gadobutrol Monohydrate – Ph. Eur. 9.0 07/2016:1215	EP	None	RP end-capped phenylhexylsilyl silica gel, 4.6 x 250 mm, 3 µm	A) 0.5% acetonitrile and 99.5% water pH 3.6 adjusted with formic acid B) acetonitrile	Gradient	In official text	
Vigabatrin	Vigabatrin Pharmeuropa 30.2, April 2018.	EP	None	RP end-capped solid core phenylhexylsilyl silica gel, 4.6 x 100 mm, 2.7 µm	19.5% methanol, 80.5% water (v/v) with 2.1 g/L perfluoroheptanoic acid (PFHPA)	Isocratic	Adopted for next version	

Analytes	Method Reference	Organization	Matrix	Column	Mobile Phase	Gradient or Isocratic	Status	Additional Information
Topiramate	Topiramate Pharmeuropa 27.4, October 2015.	EP	None	RP solid core pentafluorophenylsilyl silica gel, 4.6 x 100 mm, 2.6 µm	A) 1.93 g/L ammonium acetate, pH 3.5 B) acetonitrile	Gradient	Adopted for next version	
Ibandronate sodium monohydrate	Ibandronate Pharmeuropa 22.4, October 2010.	EP	None	RP octadecylsilyl silica gel with embedded strong anion exchange groups, 4.6 x 150 mm, 2.7 µm)	A) water B) 150 mL acetonitrile plus 150 mL of 11.4 g/L trifluoroacetic acid, filled to 1 L with water	Gradient	In process / under consideration	
Aspartic acid	Aspartic acid Pharmeuropa 22.4, October 2010.	EP	None	RP C18, 4.6 x 150 mm, 5 µm	4% 0.36 g/L already defined above acid (PFHPA) in methanol 96% 0.36 g/L PFHPA in water (%/ % v/v)	Isocratic	In process / under consideration	Applab Library
API and counterions	Validation and application of an HPLC-CAD-TOF/ MS method for identification and quantification of pharmaceutical counterions. Pharmeuropa bio & scientific notes 2014, 81-91.	EP	None	Mixed mode Thermo Scientific™ Acclaim™ Trinity P1, 3.0 x 50 mm, 3 µm (P/N 071388)	A) 0.2 M ammonium formate in water (pH4.0) B) water C) acetonitrile	Gradient	Published for consideration	Applab Library Mixed-mode HPLC columns
Valine and impurities	Determination of the purity of valine by isocratic liquid chromatography coupled with charged aerosol detection Pharmeuropa bio & scientific notes, 2015; 2015, 11-18.	EP	None	RP C18, 4.0 x 150 mm, 3 µm	20 mM Perfluorobutyric acid in acetonitrile/water (10:90 v/v)	Isocratic	Published for consideration	Applab Library

For more references download the Charged Aerosol Detection bibliography highlighting the breadth and scope of different analytical methods found in the literature: <https://www.thermofisher.com/de/de/home/global/forms/industrial/charged-aerosol-detection-bibliography.html>

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