5320 ELCD

ELECTROLYTIC CONDUCTIVITY GC DETECTOR

The 5320 Electrolytic Conductivity Detector (ELCD) is designed for selective detection of halogen-containing compounds. The 5320 ELCD consists of three principal components: the reactor assembly, the cell-solvent assembly, and the detector controller. The ELCD's primary mode of operation is the halogen mode (X); sulfur (S) and nitrogen (N) modes are also available. Each detection mode kit contains all of the required materials (except the solvent) to operate the ELCD in the specified mode.

Operating Principle

The ELCD converts halogen compounds eluting from a GC column to an ionizable gas (HX) using reductive conditions in a high-temperature catalytic microreactor. Gaseous reaction products carried into the detector cell become dissolved in a deionized solvent, which increases the electrolytic conductivity of the mixture. The detector amplifies this instantaneous change in conductivity, producing a signal proportional to the mass of halogen in the original compound.

ELCD Capabilities

- Quick-change reactor design, disposable resin cartridge, and reliable solvent system
- Analog-controlled reactor temperature and solvent flow
- Detector base optimized for capillary columns
- Solvent venting using GC timed-event relay
- Direct interface with most GC brands and models
- Directly interfaces to a 4430 PID without a transfer line to form a tandem detector that requires only one detector port

Principal Applications

- USEPA Methods (502.1, 502.2, 601, 608, 611, 8010, 8021)
- VOCs
- Pesticides
- Halogenated Compounds
- QA/QC
- Petroleum Products
- Process Control, Testing, and Analysis
- Fluorinated and Chlorinated Contaminants in Process Streams

O·I·Analytical
a xylem brand

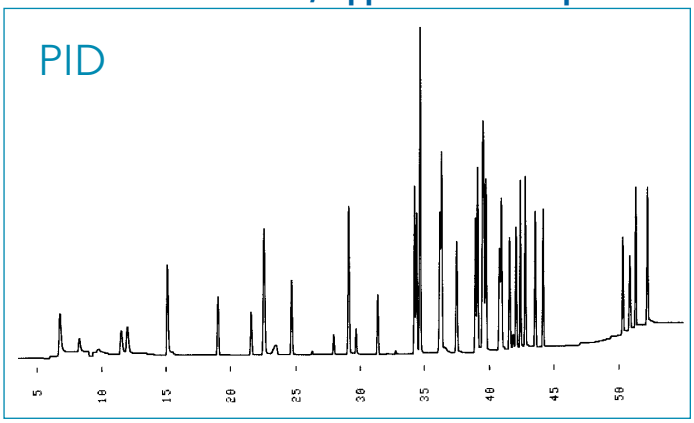
5320 ELCD SPECIFICATIONS

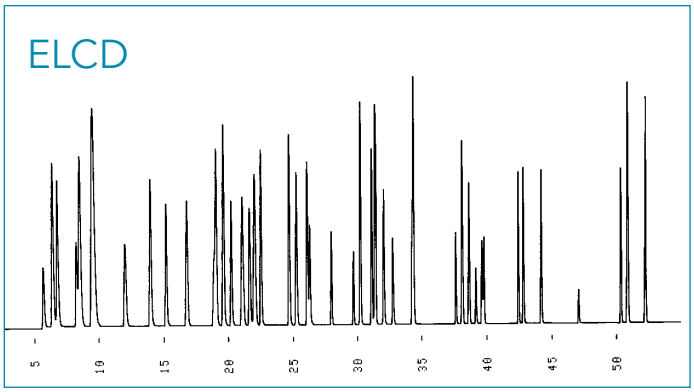
5320 Specifications – Halogen Mode

Detectable Mass	
Maximum*	1 pg lindane
Maximum	5 µg lindane
Dynamic Range	5 x 10^6
Selectivity	Cl/HC > 10^6 Cl/N > 10^5 Cl/S > 10^5
Reactor Temperature	
Range	800 – 1,100 °C in 100 °C increments
Stability	± 1 °C
Solvent Flow	Adjustable on the cell amplication board
Solvent Flow Range	0-200 µL/min
Solvent Vent Valve	Controlled by GC timed-event relay
Detector Output	0-1 V or 0-10V
Operational Modes	Halogen, Sulfur, Nitrogen
Gas Requirements	Hydrogen, Ultrahigh purity (99.999% or better)
Power Requirements	90–260 V_{AC} (±10%) 47–63 Hz, 200 W
Detector Controller	
Weight	3.8 kg (8.4 lb)
Dimensions	21.0 cm H x 12.7 cm W x 30.5 cm D (8.25" H x 5.0" W x 12" D)

* Minimum Detectable masses were obtained under optimal operating conditions.

PID and ELCD chromatograms of USEPA Method 502.2 standard, 5 ppb of each component





Standard
5 ppb each in 5 mL H_2O

Gases
10 mL/min (He) Carrier
20 mL/min (He) Makeup

Oven
35 °C for 10 min, to 200 °C at 4 °C/min, hold at 200 °C for 10 min

P&T Sample Concentrator
Standard EPA Method 502.2, Tenax®/Silica/Charcoal Trap (#9 Trap)

Column
Rtx® - 502.2, 105 m x 0.53 mm I.D. x 3.0-µm film thickness

Note
Performance is affected by several factors, including GC, column, electrolyte, gas flows, and compound class.

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