

# CERAMIC COATED THERMIONIC ION SOURCES by DET

## Improved NPD Performance - - Extended Detection Modes

### THERMIONIC IONIZATION SOURCES (BEADS) ----- \$495. each

Durable 0.062 inch diameter cylindrical ceramic structures molded about a heater wire core, and mounted on a hexagonal shaped stainless steel flange. Different ceramic additives provide a family of ion source types having different work functions for the emission of electrical charge, and different catalytic and ionizing activities. DET sources are all pre-tested for response before shipment, and are interchangeable in Agilent 6890/7890 NPD assemblies, in all DET detector assemblies, and in the Thermo 1300 NPD assembly. Standard electrical connection is a Twinex type compatible with Agilent and Thermo NPD electronics, Varian TSD electronics, as well as a stand-alone DET Current Supply. Unlike the Blos glass NPD bead, DET ceramics will not soften or melt at operating temperatures typical of NP detection. (Ion Sources are also available in a ¼ inch tube mounting, or with bare metal leads instead of the Twinex.)

**TID-10 (010-910-00)** - selective response to **Oxygenates** (especially **Phenols, Carboxylic Acids,** and **Glycols**), **Nitro-compounds, some Halogenates, Pyrrole functional group**, and other electronegative functionalities - operates at 400 - 600°C in inert (N<sub>2</sub>) or oxidizing (air, O<sub>2</sub>) gas environments – best signal-to-noise when polarized at -45 Volts or higher as available from a DET Current Supply or Thermo NPD electronics - femtogram detection for compounds like Methyl Parathion, 4-Nitrophenol, Pentachlorophenol, Heptachlor, 2,4-Dinitrotoluene, TNT when powered at high polarization – TID-10 is also the key element used in the **Catalytic Combustion Ionization (CCID)** mode which is selective to compounds containing **chains of Methylene (CH<sub>2</sub>) groups** in Petroleum Hydrocarbons, FAMES, or Triglycerides with no response to Aromatic or Cyclo-Hydrocarbons and with discrimination between compounds containing saturate vs. unsaturated Carbon bonds. Also, **TID-9 (010-909-00)** & **TID-11 (010-911-00)** for lower & higher concentrations of TID-10 type ceramic catalyst formula.

**TID-2 (010-902-00) - NPD** - selective response to **N,P compounds** - Black Ceramic coating has long life and minimal tailing of phosphorus compounds - operates at 600 - 800°C in a dilute H<sub>2</sub> in air gas environment - low picogram detection for NP compounds - lower cost alternative to Agilent NP sources.

**TID-4 (010-904-00) - NPD** - Our best coating for selective detection of **N compounds** (not recommended for P compounds because of tailing) - operates at same NPD conditions as TID-2 with 2 to 3 times better N detection than TID-2.

**TID-3 (010-903-00)** - Selective response to **Volatile Halogenates** - more uniform response to halogenates than TID-1 - operates at 600 - 800°C in inert (N<sub>2</sub>) or oxidizing (air, O<sub>2</sub>) gas environments - low picogram detection for Trihalomethanes with minimal peak tailing and greater response for Br versus Cl – best sensitivity when polarized at -45 Volt or higher.

**TID-5 (010-905-00) - Halogen selective** detection - more uniform response than TID-3 - operates at same temperatures and gas environment conditions as TID-2, but with a polarization voltage of -45 V or higher – also provides exceptional **selectivity for Br and I versus Cl** when configured with a stoichiometric mixture of Hydrogen and Air (e.g., H<sub>2</sub> = 5, Air = 12.5, N<sub>2</sub> makeup = 30 mL/min).

**TID-6 (010-906-00) - P selective detection with suppressed N** response - uses much higher Hydrogen, Air, and Nitrogen flows than the TID-2 and TID-4 NPD modes, and uses a detector structure with an internal upstream restrictor to prevent flashback to a self sustaining flame (e.g., H<sub>2</sub> = 20, Air = 200, N<sub>2</sub> makeup = 100 mL/min).

**TID-7 (010-907-00)** - Green Ceramic for **Halogenated Pesticides, PCBs** - operates in N<sub>2</sub>, Air, or O<sub>2</sub> - best sensitivity when polarized at -45 V or higher.

**CFID (020-901-00)** – High work function for operation downstream of a flame in a **Remote FID** detection mode which is selective to **compounds containing P, Pb, Sn, or Si atoms**. Selectivity improved by using a Hydrogen-Methane fueled flame.

**FID Probe (020-902-00)** – Uncoated Pt alloy wire used for **Universal Detection** in **FID** or **HWCID** (Hot Wire Combustion Ionization) mode.

## DETECTOR Engineering & Technology, inc.

486 N. Wiget Lane, Walnut Creek, CA 94598 USA, Phone: 925-937-4203 Fax: 925-937-7581

email: [detplp@aol.com](mailto:detplp@aol.com)

web: [www.det-gc.com](http://www.det-gc.com)

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