

2005

Product

Catalog



colitag™
The First Definitive Water Test System

PEAK PERFORMANCE™
CERTIFIED REFERENCE MATERIALS

Accuprep 7000™
Extraction Manifold

MOD BLOCK

HROMalytic +61(0)3 9762 2034 09
AUSTRALIAN Distributors ECHnology www.chromtech.net.au

CPI
INTERNATIONAL

*Innovative Solutions
in Analytical Science and
Technology*

RC
ANSI-RAB
DMS
CALIBRATION
ISO 9001:2000

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Feature Products...

ModBlock™ Metals Block Digester

CPI helps you eliminate the hot plate shuffle with the new ModBlock™ – a modular block digester. With it's 24, 48 or 96 sample capacity, disposable polypropylene vessels, compact size and remote programmable controller, the ModBlock™ makes all your metals digestions faster, easier and more efficient!

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Oil & Grease Disks for EPA Method 1664

CPI Oil & Grease SPE disks for EPA Method 1664 meet MDL, Precision and Recovery limits while saving your lab hours of extraction time and significant solvent volume. Call for your FREE disk sample pack and complimentary copy of EPA Method 1664!



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Expanded Inorganic Standards Line

Our Peak Performance™ standards line now includes instrument specific mixes like Wavecal®, Optima® 3000 solutions and a tuning solution for HP® 4500 instruments. We've also added more ICP-MS Mixes, AA standards, buffers and releasing agents, IC blends and more!

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ICP-MS Cones and Multipliers

In addition to ICP-MS glassware and standards, CPI now offers Electron Multipliers and Cones for popular ICP-MS instrumentation. Guaranteed for long life and high performance, these products will meet or exceed your expectations for quality and value.

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LCM™ SPE Manifold and Evaporator QDM

Designed for high productivity, ease of use, and durability, this economically priced SPE manifold includes special features to reliably perform all your current and future SPE disk extractions.

The Quick Dry Module (QDM) for Oil & Grease analysis uses NO HEAT and can evaporate 30mL of hexane in only 20 minutes without analyte loss – never burn a sample!

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High Performance RF Load Coils

A patent-pending, long-life coil, this gold plated RF coil maximizes performance by preventing copper atom migration. See the difference for yourself!



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Colitag™ Coliform & E.coli Test Kits

Introducing Colitag™, The First Definitive Water Test System! EPA-approved Colitag™ gives you an alternative for ONPG and MUG based detection of total coliforms and E. coli, for TCR reporting and other applications. Excellent for detecting chlorine injured cells!



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APEX High Sensitivity ICP/ICP-MS Inlet Systems

Apex – the ICP-MS/AES sample introduction system that takes sensitivity, efficiency and precision to new heights! The Apex operates at 20uL to 1mL/min and delivers over a 10-fold increase in raw instrument sensitivity. Analyze corrosive samples, organic solvents and high TDS samples, all with near 100% transport efficiency and minimum BEC's!

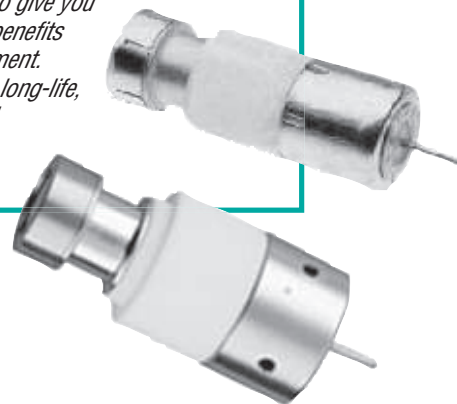
Plus, check out the economical Apex E for environmental AES/OES applications.



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Agilent-Type Electron Multipliers

GPI electron multipliers for HP/Agilent and other GC/MS are designed to give you several performance benefits over the standard element. Save money on these long-life, high quality products!



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Peltier-Cooled Inlet For ICP/ICP-MS

The PC³ ICP-MS/AES inlet system delivers true temperature stabilization and high sensitivity, all in one plug & play design! Peltier-cooled, with no water lines, this system is perfect for direct organic solvent analysis, isotope ratio analysis and other ICP-MS/OES uses. Economically improve stability and performance today!

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When you place an order with CPI, you can expect more than just competitive prices...

Responsive Service & Shipping

The same commitment to problem-solving that launched CPI International in 1982 makes us uniquely prepared to serve you in the new millennium. Our customer service is fast and friendly. Our technical support is responsive and reliable. And our approach is distinctly personal — you'll deal with qualified professionals, not telephone menus. Our focus on service even extends into our shipping capabilities, with 2-day shipping standard on all orders and next-day delivery options available. For custom standards, we provide a quote within 24 hours and guarantee shipment within 7 days.

Significant Savings

The sheer volume of products we sell gives CPI International a great deal of bargaining power with manufacturers. That enables us to offer significant savings to our customers. And with our vast inventory and OEM compatibility, you can consolidate your purchases and save even more.

From our product lines to our responsive service, our rapid shipping to our cost savings, CPI International represents truly remarkable value for the scientific community.

How to Order:

USA	EUROPE
 PHONE: 800-878-7654	PHONE: +31 20 638 05 97
 FAX: 707-545-7901	FAX: +31 20 420 28 36
 E-MAIL: sales@cpinternational.com	E-MAIL: sales@cpinternational.com
 MAIL: CPI, 5580 Skylane Boulevard, Santa Rosa, CA 95403	MAIL: CPI, PO Box 2704, 1000 CS Amsterdam, The Netherlands

Credit Cards

For your convenience, CPI accepts Visa[®], Mastercard[®] and American Express[®].



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CPI INTERNATIONAL'S EDI SERVICE IS: EDI MASTERS (800) 858-5334

CPI INTERNATIONAL'S DOD CAGE CODE IS: 04GH1

www.cpiinternational.com

ORDERING

COLTAG

ASPE

TOX/AOX

GC

AAS

ICP

STANDARDS

IN



1.

It's Easy!

Logon to cpiinternational.com and pick the product category from which you want to order. We also have a search function by CPI P/N and OEM P/N.



2.

Save Time!

Simply select the item you wish to purchase by typing the order quantity into the online order form.



3.

Check Out!

You will see your complete shopping cart and be able to enter your new account information or existing account number. You can also choose between net 30 billing or credit card.

***Order
Online
Today
and
Save
Time
and
Money!***



***NEW! Call to
set up your
corporate
log-in today!***

Switch To Colitag™
And Find The One Thing
You've Been Missing...

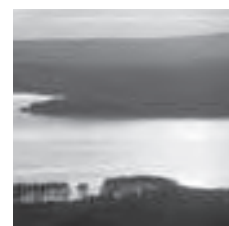
CONFIDENCE



The First Definitive Water Test System For Coliforms & E. coli.

Ensuring a safe drinking water supply is protecting life. For this vital purpose Colitag™ is the most reliable test available. A unique patented system of injured cell recovery automatically resuscitates and detects chlorine-injured Coliforms and *E. coli* that other tests can miss. Colitag™ is the only system that ensures the greatest degree of public safety.

Colitag™ is also the only test that allows you to detect *E. coli* by two methods simultaneously, the MUG and indole tests. That means accurate results you can be doubly sure of, without concern over false-negative readings.



Colitag™ does all this with a simple, ready to use medium that you combine with a water sample. Safeguard your water system. Test with certainty. Test with Colitag™.



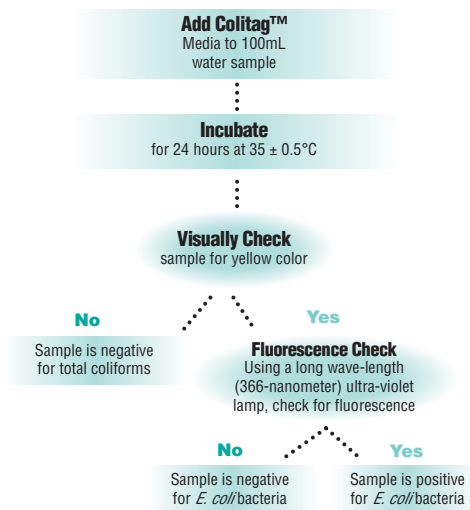
Total Coliform and E. Coli Test Products

For Accuracy, Simplicity, Reliability... No Other Test Comes Close To Colitag™

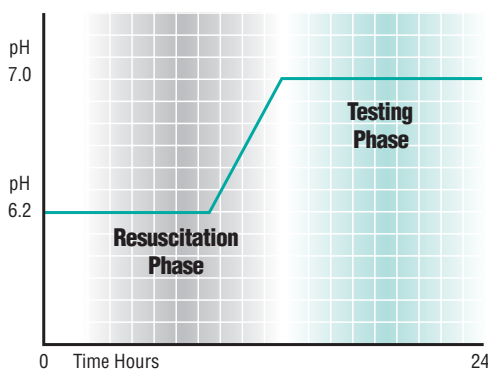
EPA-Approved for TCR Compliance Monitoring.

- Allows you to run a traditional Presence/Absence (P/A) or MPN format
- Detects 1 CFU of total coliform or *E. coli* bacteria per 100ml water sample
- Enables vigorous bacterial growth for *E. coli* injured by chlorination
- Provides desired selectivity with growth inhibitors

Traditional EPA Protocol P/A Test Methodology (Total Coliform Rule)



Colitag's Patented Self-Adjusting pH Level Resuscitates Chlorine- Injured Bacteria



Colitag™ Test Products

Ask about Colitag's optional method for detecting fecal coliforms and *E. coli*.

- Simultaneously provides 24-hour fecal coliforms and *E. coli* determinations
- Detects both MUG-negative and MUG-positive *E. coli* in one test
- Includes built-in ability to detect *E. coli* using the reliable indole test



Colitag™ Water Test Products

Description	P/N	Sodium Thiosulfate	Tamper Seal	Tamper Lock
Colitag Test Kit, P/A, 100mL format, 20/pk	4600-0011			
Colitag Test Kit, P/A, 100mL format, 100/pk	4600-0013			
Colitag Test Kit, P/A, 100mL format, 200/pk	4600-0012			
Colitag Test Kit, P/A, 100mL format, 250/pk	4600-0014			
Colitag Test Kit, P/A, 100mL format, 500/pk	4600-0015			
Colitag Comparator, P/A, ea	4600-0040			
Description	P/N	Sodium Thiosulfate	Tamper Seal	Tamper Lock
120mL Sterile Coliform Bottle, w/Na2S2O3 w/Screw Cap and Tamper Resistant Label (polystyrene), 100/pk	4600-0121	YES	YES	
120mL Sterile Coliform Bottle, w/Na2S2O3 w/Fliptop Cap and Lock (polypropylene), 200/pk	4600-0125	YES		YES
120mL Sterile Coliform Bottle, w/Na2S2O3 w/Screw Cap and Tamper Resistant Label (polypropylene), 200/pk	4600-0130	YES	YES	
250mL Sterile Coliform Bottle, w/Na2S2O3 w/Screw Cap and Tamper Label (HDPE), 230/pk	4600-0131	YES	YES	
150mL Sterile Coliform Bottle, w/Na2S2O3 w/Screw Cap and Shrink Band (polystyrene), 100/pk	4600-0141	YES	YES	
Single Bottle Mailer	4600-0200			



Our high recovery SPE disks won't keep you waiting...

Features of GPI's Fiber SPE Disks Include:

- Constructed of glass fiber, instead of Teflon® for improved flow rates.
- Thickness of fiber disk helps trap and isolate particulates.
- Fiber disk with integrated phase promotes even distribution and best recoveries.
- Glass fiber allows high loading of phase to maximize disk capacity.
- Forms an excellent seal in all extraction manifolds.
- Available in 47mm or 90mm sizes, in a variety of phases.

GPI's six position Accu•prep 7000™

SPE Manifold features an integrated Teflon® 3-way sample valve at each position to support the Sample Reservoir, SPE disk and the eluent Collection Vessel. The valve allows the analyst to direct extracted sample to waste, and with a turn of the handle, route the eluent to the collection vessel. *See page 14. Also see our LCM Manifold, page 13.*

CPI: Your Source for Instrument Consumables

- Electron Multipliers
- PID Lamps
- Graphite Furnace Tubes
- ICP Glassware
- Single & Multi-Element Standards
- Pump Tubing

Solid Phase Extraction and Other Sample Preparation



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**Solid Phase
Extraction & Other
Sample Preparation**



FastFlo™ pre filter, CPI P/N
4350-010089 (47mm) or
4350-010090 (90mm)

NEW!

CPI offers the following free resources to help your laboratory prepare for upcoming EPA Method 1664 for Oil and Grease analysis. These materials will be sent to your laboratory by next day service. Just call, fax or e-mail CPI to request these items.

Oil & Grease SPE Disks-EPA Method 1664

Pursuant to the Montreal Protocol on Substances that Deplete the Ozone Layer, worldwide countries continue progress toward effectively phasing out the use of all Chlorofluorocarbons. In connection with these efforts, the U.S. EPA has published new Method 1664 to replace existing Oil & Grease Method 413.1 which uses Freon-113, a Class I CFC, as the extraction solvent. New Method 1664 employs n-Hexane as the extraction solvent instead of Freon® and most importantly, permits use of solid phase extraction techniques.

When compared to liquid/liquid extraction, CPI solid phase extraction disks for Oil & Grease are much easier to use, cut extraction time by at least two-thirds, require less than half the solvent, do not form emulsions during sample preparation, and provide equivalent or superior extraction performance:

- **Speed Extraction Time** – *Faster flow rates on most samples*
- **Save Money** – *Less expensive than Liquid/Liquid extraction*
- **Sediment Trapping Design** – *Patented design traps sediment while ridges allow sample to pass*
- **Eliminate Emulsions and Freon®** – *Eliminate shaking, emulsion formation, and reduce solvent usage*

Oil & Grease SPE Disks & Supplies

Description	CPI P/N	Replaces JT Baker® P/N (Varian®) P/N
Oil & Grease SPE Disks, 47mm, 20/pk	4350-13	7522-06/8060-06 (1214-5017)
Oil & Grease SPE Disks, 90mm, 10/pk	4350-139	7522-09 (1214-5016)
FastFlo™ Prefilter, for 47mm glass, 20pk	4350-010089	n/a
FastFlo™ Prefilter, for 90mm glass, 10pk	4350-010090	n/a
Oil & Grease Standard, 100mL	4401-1664-2	n/a

The above standard contains Hexadecane and Stearic Acid at 4mg/mL each in Acetone.

Free Training Material for EPA 1664

Description	CPI P/N
Application Note, Method 1664 <i>"Optimization of glass fiber solid phase extraction disks for the determination of n-hexane extractable materials"</i> <i>This application note covers use of SPE techniques under the requirements of proposed Method 1664. It includes numerous tips for performing the extraction and optimizing recoveries and precision. In addition, this application note compares the performance of five brands of Oil and Grease SPE disks on the market and highlights their strengths and drawbacks. It is a helpful resource for saving method development time in the lab.</i>	4350-050002
Video Cassette - 1664 & CPI's Accu•prep 7000™	4350-050003
Method 1664 <i>Copy of the current draft EPA Method 1664</i>	4350-050004
Samples of CPI Oil & Grease SPE disks (47mm) <i>Comes complete with step-by-step instructions for performing the extraction to meet Method 1664 performance criteria.</i>	4350-13S

Oil & Grease SPE Disks

Using SPE under EPA Method 1664

Performance Based Method

The U.S. EPA has made Method 1664 “performance-based”. This means that although the method is written to include liquid/liquid extraction and requires using n-hexane as the solvent instead of Freon®, the analyst is “permitted (to) modify the method” to save solvent, time and money.

Advantages of SPE for Oil and Grease Analysis

In section 9.1.2, Method 1664 proposes solid phase extraction as a possible alternate extraction technique. CPI also believes that Oil and Grease analysis is well suited for SPE due to the opportunity to greatly reduce solvent volume and extraction time. Using SPE for Oil & Grease analysis in the laboratory means significant material and labor cost savings and improved turnaround time to clients.

Using SPE for Method 1664

According to the Method, the first step in “demonstrating equivalency” of the “modified method” is to determine Initial Precision and Recovery (IPR) using the modified method. The results obtained must meet or exceed stated method limits. At CPI, we’ve done research up front to ensure that your lab receives required recoveries and precision the first time you try our Oil & Grease SPE disks. The results of our IPR analysis are presented below.

Key Data	Required Limit Per 1664	CPI O&G Disk Performance
HEM Precision	10%	6.48%
HEM Recovery	83 - 101%	99.25%
HEM MDL	1.4mg/L	.78mg/L

Other Data	CPI O&G Disks
Standard Deviation	0.378
RSD	2.20%
Extraction Time	25 min.
Elution Time	5 min.
Total Solvent Used	45mL
Solvent Saved by Using SPE	45mL

(Note that liq/liq extraction per 1664 requires 90mL of solvent)

Summary of Analysis Performance data above was measured using CPI Oil & Grease SPE disks. Samples were spiked with a hexadecane/stearic acid spiking solution. The purpose of this analysis was to measure MDL and Initial Precision and Recovery (IPR) and compare to Method specified limits (see section 9.2 of 1664). Based on the above, CPI Oil & Grease disks met method requirements for MDL and IPR.

Flow Rate Comparison - 1 Liter Sample			
Sample Type	CPI O&G Disks	Membrane Disks	Other Glass Fiber Disks
Citrus Producer	1hr. 38min.	Clogged at 2 hrs., after filtering only 200mL. Total Time: 5hrs	Clogged at 3hrs., after filtering only 300mL. Total Time: 4hrs.
Foods Manufacturer	1hr. 48min.	2hrs. 18min.	4.5hrs.
Airline	21min.	56min.	41min.
Car Wash	25min.	42min.	37min.



Solid Phase Extraction & Other Sample Preparation

“ In recognition of advances that are occurring in analytical technology, the analyst is permitted certain options to improve separations or lower the costs of measurements, provided that all performance specifications are met. These options include alternate extraction and concentration devices and procedures such as solid-phase extraction...”

Excerpt from EPA Method 1664, Section 9.1.2, “Quality Control”, Rev. April 1995.

Performance that meets Method Requirements...

Call for free samples of CPI Oil & Grease Disks

**Solid Phase
Extraction & Other
Sample Preparation**



Nu•phase™ SPE Disks

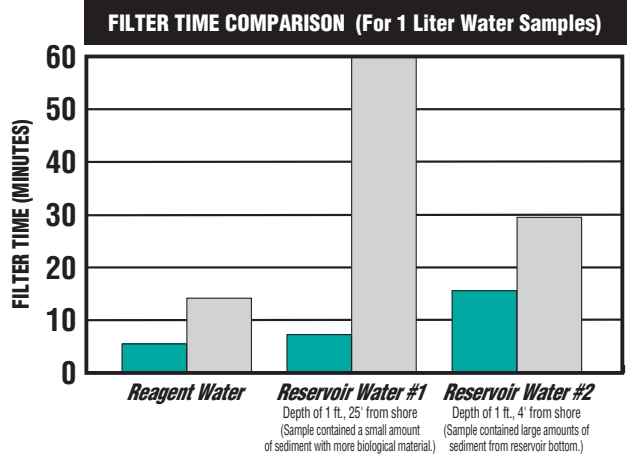
Many laboratories choose Solid Phase Extraction (SPE) as an efficient, accurate method for analyte concentration prior to GC analysis. SPE offers significant advantages over conventional liquid/liquid extraction. These advantages include faster extraction and concentration time, reduced solvent usage, and lower required sample volume.

Today, there is a better alternative to SPE cartridges or Teflon® SPE disks...

Why wait for Teflon® SPE Disks to filter particulate samples?

Our goal in developing a high-flow, high-retention SPE disk was to increase sample flow rate without compromising recoveries. To meet this objective, we use a porous

glass-fiber filter media to contain the phase instead of Teflon® or a glass frit (both of which impede flow rate due to their density and propensity for clogging). The result is an SPE disk yielding reproducible recoveries at an outstanding flow rate, as indicated at right.



Note: All samples were extracted using a 47mm filter flask apparatus. Teflon® disks were run at 15 in. Hg.

60% faster flow rates!

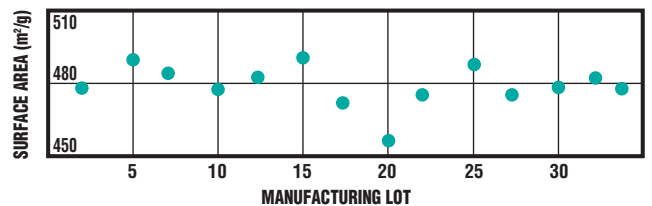
Reproducible results!

We use only the highest quality Silica...

Nu•phase™ SPE disks are manufactured with only the highest quality bonded-phase silica. With a mean pore size of 60Å, our silica provides maximum total surface area with even bonding. Our specialized, controlled manufacturing procedures result in only nominal variances in total surface area from lot to lot.

Even Silica distribution through unique, patent pending processes...

Reproducible performance depends upon consistent and even loading of the bonded silica from disk to disk and from lot to lot. To help promote consistency in loading, we incorporate our bonded silica during production of the fiber filter media. Through this unique patent pending manufacturing technology, we are able to achieve an SPE disk with maximum loading and even phase distribution throughout the entire depth of the fiber media.



Nu•phase™ SPE Disks		
Description	CPI P/N	Replaces JT Baker® (Varian®) P/N
C18 Nu•phase™ SPE Disks, 47mm, 20/pk	4350-12	7460-06/8055-06 (1214-5004)
C18 Nu•phase™ SPE Disks, 90mm, 10/pk	4350-14	7460-09/8056-06 (1214-5007)

INDEX STANDARDS TOX/AOX GC ICP AAS TOX/AOX SPE COLITAG ORDERING

LCM Manifold & Quick Dry Module

Oil & Grease SPE Analysis At Its Most Efficient & Economical

Reap the rewards of the Oil & Grease Testing Market without the budget-busting expense of high priced equipment. Get the affordable LCM Manifold from CPI International!

For less than the cost of a couple cases of Freon, you can participate in the benefits of SPE for Oil & Grease. The LCM makes it all possible:



**CPI P/N 4350-010500
LCM Manifold, 3 Station Complete**

- Designed exclusively for Method 1664
- Integrated 3-way valve system for eluting without disassembly
- Elute directly to your weigh dish eliminates transfer errors
- Aspirate directly from your sampling bottle - minimal cleanup
- Small footprint takes up minimal space under your hood
- No glassware, no costly breakage
- Unlimited expandability through linking
- User-friendly design
- Affordably priced for a true competitive edge

You can afford to compete in the Oil & Grease Testing Market.

Low in cost - but high in quality - this 47mm disk extraction manifold can process three samples simultaneously. Constructed of aluminum, UHMW polyethylene and stainless steel, the LCM Manifold is built for durability and convenience. No fragile glass unions, tubing, or reservoirs to break. NO individual vacuum manifold bars to purchase. LCM Manifolds are designed to be linked in sequence to provide an increased number of positions.

CPI's Quick Dry Module takes the guesswork out of your Oil & Grease evaporations.

- Evaporates 3 samples simultaneously
- 30ml of hexane to dryness in 20 minutes
- Accommodates standard 70mm aluminum weigh dishes
- Faster and safer than a hotplate

Most analyte loss in Oil & Grease analysis occurs while evaporating hexane as the analytes burn off at temperatures just above the boiling point of the solvent. The QDM uses NO HEAT and can evaporate 30ml of hexane in only 20 minutes. Using vacuum pressure the QDM safely and effectively evaporates your samples. It's faster than a hot plate and never burns a sample.



**CPI P/N 4350-010505
Quick Dry Module, 3 Station Complete**

Solid Phase Extraction & Other Sample Preparation

CPI Nu•phase SPE disks offer superior analytical performance and significantly faster flow rates, all at an economical price.

**Solid Phase
Extraction & Other
Sample Preparation**

Accu•prep 7000™ SPE Manifold

As solid phase disk extraction continues to gain acceptance as a quick, solvent saving extraction technique the modern laboratory will increasingly depend on a high production, durable extraction device to meet growing sample preparation needs. More than ever, devices with maximum capacity, rugged construction and simplicity in design are being sought as an alternative to temporary, fragile and frustrating less expensive units. The Accu•prep 7000™ SPE manifold from CPI is designed specifically to meet these needs. With unlimited expandability, exceptionally durable construction, and an integrated, production-oriented design, the Accu•prep 7000™ is ready to perform all your current and future solid phase disk extractions.

**Unique features,
durability and
economical price
set the Accu•prep
7000™ ahead of the
competition...**

Unique Features of The Accu•prep 7000™

Our integrated 3-way valve system allows eluting to be performed directly after extraction without disassembly of the manifold. In extraction mode, the collection vessel may be removed without breaking the system vacuum. The valve is constructed entirely of Teflon.

3-way valve includes 316 SS disk support screen and incorporates a unique Aluminum threaded Screw Cap to provide simple, leak-free attachment of 300mL, 600mL or 1,000mL sample reservoir. Using an ingenious adapter, the valve easily converts to accept 90mm disks.



**Accu•prep7000™
Advantages:**

- Unlimited Expandability through Linking
- Offered Complete or Station by Station
- Economically Priced
- Exceptional Durability, Stability and Inertness
- Compact, Efficient Size
- User-Friendly Design for Maximum Productivity
- Designed for All SPE Sample Prep Methods
- Accepts Many Standard Collection Vessels
- Warranted for Complete Satisfaction

In extraction mode, waste travels down a clear drain, allowing the analyst to monitor extraction flow rate.

Our 3-way valve system incorporates standard GPI 24-410 internal threads to accept a range of commonly available collection vessels. An adapter allows 24/25 or 24/40 ground-joint boiling flasks to be used also.

Accu•prep units link together via the vacuum attachments at each end of the base, allowing unlimited expandability and the ability to conserve space. Durable base supports six extraction positions with a compact footprint of only 10"W x 17"L. Design distributes load evenly to prevent tip-over when Manifold is fully loaded. Hard-anodized finish will not corrode or discolor over time.

Accu•prep 7000™ SPE Manifold

High Productivity, Simplicity.

The key to the simplicity of the Accu•prep 7000 is the 3-way sample valve. This component acts as an inert valve, while also supporting the Glass Sample Reservoir, SPE Disk and the Sample Collection Vessel. **This one part accomplishes what three parts do in competing brand manifolds.** Fewer parts means less cleaning time and less pieces to replace.

The 3-way sample valve is designed to route the extracted sample to waste and with a turn of the valve handle, route the eluent to the Sample Collection Vessel (*Figure 1*). Because the collection vessel mounts to the valve, you don't have to disassemble the manifold to access the eluent. The routing valve for each position can be adjusted to control vacuum pressure in both the extraction and eluting modes. Since the valve isolates vacuum pressure to one mode or the other, the eluent may be removed while the next SPE disk is being conditioned. The 3-way sample valve also includes an off position to shut down the individual station when not in use.

Flexibility

Whether you are performing Oil and Grease Method 1664, Method 525.1, 525.2, 550.1, 608, or 549.1, our Manifold has been designed to facilitate your analysis.

For easy loading and leak-proof sealing of the SPE disk, the Accu•prep 7000™ utilizes a unique threaded Screw Cap to hold the glass sample reservoir in place over the disk (*Figure 2*). To install an SPE disk, the Screw Cap is simply loosened enough to permit removal of the glass sample reservoir. Once the reservoir is slid out of position, an SPE disk may be set in place over the 316 stainless support screen. The reservoir is then replaced and the screw cap tightened to seal the disk. This unique design allows for simple replacement of the SPE disk with minimal disassembly of the manifold.

The Accu•prep 7000™ allows the analyst to easily convert from 47mm to 90mm disks on a station by station basis (*Figure 3*). Using CPI's unique 90mm adapter, a 47mm station can be easily converted to run 90mm disks by simply removing the 47mm glass sample reservoir and Screw Cap. Once removed, the 90mm adapter assembly is simply threaded onto the top of the 47mm station to achieve a guaranteed leak-proof seal (note that the Accu•prep 7000™ may also be ordered with any number of 90mm Stations, eliminating the need to purchase the 90mm adapter).

The Accu•prep 7000™ 3-way valve also includes a GPI 24-410 universal thread size at the collection vessel attachment, allowing the analyst to select between a range of vessels, including flat bottom 40mL VOA vials and 70mL test tubes (*Figure 4*). An adapter is also available to accept 24/25, 24/40 or 19/22 ground-joint vessels, if desired.



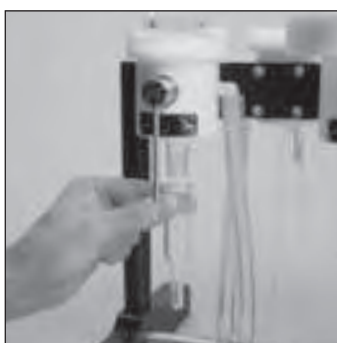
(Figure 1)



(Figure 2)



(Figure 3)



(Figure 4)

Solid Phase Extraction & Other Sample Preparation

Changing the Accu•prep 7000™ to run 90mm disks is fast and easy, with no handling of fragile glass assemblies!

**Solid Phase
Extraction & Other
Sample Preparation**

Accu•prep 7000™ SPE Manifold

The Accu•prep 7000™ is available complete or station by station. You may purchase the manifold complete with six extraction stations or purchase the six position manifold rack (CPI P/N 4350-352), and one or more extraction stations as desired. 90mm stations are also available (CPI P/N 4350-389). Accu•prep 7000 manifolds are designed to be linked in sequence to provide an unlimited number of positions.



**The Accu•prep 7000™
can be ordered
complete or station
by station for your
convenience!**

**Choose any
combination of 47mm
or 90mm stations!**

Accu•prep 7000™ SPE Manifold

CPI Description	P/N
Accu•prep 7000™ System Complete <i>Includes pre-assembled manifold rack with six 47mm Extraction Stations. Each Extraction Station comes complete with a 300mL Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-07
Accu•prep 7000™ System Complete (47mm, 1000mL) <i>Includes pre-assembled manifold rack with six 47mm Extraction Stations. Each Extraction Station comes complete with a 1000mL Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-08
Accu•prep 7000™ System Complete (90mm, 1000mL) <i>Includes pre-assembled manifold rack with six 90mm Extraction Stations. Each Extraction Station comes complete with a 1000mL Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-09
Accu•prep 7000™ Rack <i>Includes pre-assembled Manifold Rack without Extraction Stations. Stations may be purchased as needed to build the Manifold from one to six positions.</i>	4350-352
Single Extraction Station, 47mm, for Accu•prep 7000™ (300mL) <i>A complete 47mm Extraction Station used to expand the Accu•prep 7000 up to six total stations. Comes complete with mounting hardware, Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-380
Single Extraction Station, 47mm, for Accu•prep 7000™ (1000mL) <i>A complete 47mm Extraction Station used to expand the Accu•prep 7000 up to six total stations. Comes complete with mounting hardware, Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-383
Single Extraction Station, 90mm, for Accu•prep 7000™ (1000mL) <i>A complete 90mm Extraction Station used to expand the Accu•prep 7000 up to six total stations. Comes complete with mounting hardware, Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-389
Adapter Kit, 47mm to 90mm <i>Converts one 47mm station to accept 90mm SPE disks. Includes 1000ml Glass Sample Reservoir, Disk Support Screen and 24 x 200mm Sample Collection Vessel.</i>	4350-375
Adapter Kit, 90mm to 47mm <i>Same as above, but converts 90mm position to 47mm position.</i>	4350-376

Manifold Replacement Parts and Accessories

Description	CPI P/N
Oil & Grease Nu•phase™ SPE Disks, 47mm, 20/pk	4350-13
Oil & Grease Nu•phase™ SPE Disks, 90mm, 10/pk	4350-139
C18 Nu•phase™ SPE Disks, 47mm, 20/pk	4350-12
Glass Sample Reservoir, 47mm, 300mL	4350-379
Glass Sample Reservoir, 47mm, 1,000mL	4350-432
Glass Sample Reservoir, 90mm, 1,000mL	4350-431
FastFlo™ Prefilter, for 47mm glass	4350-010089
FastFlo™ Prefilter, for 90mm glass	4350-010090
Disk Support Screen	4350-236
Sample Collection Vessel, 24mm x 200mm, 70mL, 36/pk	4250-52
Sample Collection Vessel, 24mm x 95mm, Flat Bottom, 40ml, 144/pk	4250-51
Screw Cap, Aluminum 47mm	4350-358
Screw Cap, Aluminum 90mm	4350-359
Screen, 47mm	4350-236
Screen, 90mm	4350-336
Flask, Flat Bottom, 125ml	4350-420
Adapter Screw to 24/25 and 24/40	4350-414
Adapter Screw to 19/22	4350-415
Keck Plastic Clamp, 6/pk (for 19/22 joint)	4350-416
Keck Plastic Clamp, 6/pk (for 24/25 and 24/40 joints)	4350-417

A Complete SPE Vacuum System



- A
- Manifold
- B
- Tubing
- C
- Aspirator
- D
- Trap in Ice Bath
- E
- Vacuum Pump

System Components

A	Accu•prep 7000™ SPE Manifold, 6 position	4350-08
B	Vacuum Tubing, 10 feet	4350-010109
C	Aspirator Bottle	4350-010110
	Two Hole Rubber Stopper	4350-010118
D	Cold Vapor Trap, 1000ml	4350-010111
E	Vacuum Pump, 1/3 hp, 26" Hg	4350-010112

Solid Phase Extraction & Other Sample Preparation

Call for free samples of CPI Nu•phase™ SPE disks for Oil & Grease analysis or other EPA methods

NEW!

CPI's unique FastFlo™ prefilter is designed to fit into the glass sample reservoir of the Accu•prep 7000™. This prefilter seals against the walls of the reservoir to help prevent heavy particulates from clogging the surface of the disk. This filter is specifically designed for Oil & Grease samples.



FastFlo™ pre filter, CPI P/N 4350-010089 (47mm) or 4350-010090 (90mm)



Two Hole Rubber Stopper for Aspirator Bottle, CPI P/N 4350-010118

Count on CPI for a Complete System for your SPE Disk Extractions...

**Solid Phase
Extraction & Other
Sample Preparation**



**CPI's In
Line Sample
Temperature Probe**

- PFA Teflon® coated temperature probe
- User selectable to control and monitor via block or sample temperature
- Fits all versions (50ml, 70ml, 100ml & miniMOD) of the CPI Mod Block

You can now measure and control your digestion process using sample temperature. The new in-line temperature probe incorporates a PFA Teflon® coated RTD Sensor for reliable monitoring and temperature control of your samples. Using the new in-line temperature probe you can now optimize your digestions to maintain a higher sample temperature with no operator involvement.

Works hand-in-hand with CPI's ModBlock Metals Digestion Unit.

ModBlock™ Metals Block Digester

Eliminate the Hot Plate Shuffle with CPI's ModBlock™!



Simplify your Metals Digestion and Improve Sample Throughput with these features:

- 70mL - 24, 48, or 96 (2 x 48) or 100mL - 33 or 66 (2 x 33) Sample Capacity
- Disposable Metal-Free Polypropylene Vessels - 70mL and 100mL formats
- Small Footprint
- Meets standard requirements for EPA 3000 series Method
- Temperature Range from Ambient to 180°C
- Corrosion Resistant Treated Graphite Block ensures no metals contamination
- Modular programmable PID controller sits outside the fume hood & can operate multiple ModBlock™ units simultaneously to efficiently & economically increase throughput

ModBlock Metals Digester

Corrosion Resistant...

The ModBlock™ is engineered to withstand the harsh environment of the metals digestion lab. The entire system is constructed of Graphite and advanced composites that eliminate the possibility of corrosion and metals contamination. Disposable polypropylene sample tubes mean no cross contamination and significant time savings. High throughput is the name of the game in today's competitive world and the ModBlock™ puts you and your lab in the lead by digesting up to 96 samples at a time.

Sleek and Slim...

The narrow width of the ModBlock™ maximizes your fume hood space by taking advantage of the depth of your hood, freeing the front working area, while the low profile allows you to keep the sash of the hood down ensuring proper exhaust of the acid fumes.

ModBlock™ Metals Block Digester

Modularity Means Long Life, Ease of Use and Low Cost Capacity Enhancement...

The unique design of the ModBlock™ incorporates an external controller, which can be placed outside the fume hood. This guarantees that the electronic components are not exposed to acid fumes and thus will have a longer useful life.

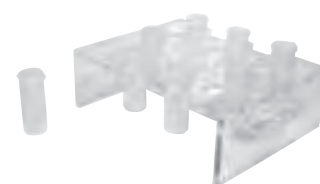
Complete Control of Your Digestion...

The ModBlock™ system is regulated by a state-of-the-art programmable PID controller. The easy-to-use control overlay makes programming simple. With the push of a button, you operate each ModBlock™ unit independently, with complete temperature and time precision. For each block, you can select between a manual or automatic mode. The manual mode will keep your ModBlock™ hot all day and also give you temperature and timer control with an audible and visible alarm when time has elapsed on each block. The automatic mode also gives complete temperature control and an audible and visible time-out alarm, but will automatically start your samples heating and/or automatically shut power off to cool at the end of the selected time period.

Convenient Sample Racks and Disposable Tubes...

The ModBlock™ also includes a convenient racking system that allows you to load and remove all samples from the block quickly. Our disposable, metal-free polypropylene sample tubes allow 70mL and 100mL capacity.

Solid Phase Extraction & Other Sample Preparation



70mL ModBlocks & Accessories	
Description	CPI P/N
miniMOD™, 24 Place Unit <i>Includes 24 place miniMOD™ block, external PID controller, 2 sample racks and qty. 400-70mL hinged-cap tubes. Other specifications: 110 VAC power, 750 Watts, In-line power fuse.</i>	4370-010400
ModBlock™, 48-Place Unit, <i>Includes a 48-place ModBlock™, external dual channel controller to allow future capacity upgrade to 96 places, 2 sample racks and qty. 400-70mL hinged-cap tubes.</i>	4370-010007
ModBlock™, 96-Place System <i>Includes two 48-place Blocks, external dual channel controller, 4 sample racks and 800-70mL hinged-cap tubes.</i>	4370-010008
ModBlock™, 48-Place Block - Upgrade <i>Includes 48-place ModBlock™, 2 sample racks and 400-70mL hinged-cap tubes.</i>	4370-010010
Sample Tubes, with hinged-caps, 70mL, 400/pk	4370-010020
Watch Glass, Ribbed, Polypropylene, 400/pk	4370-010024

100mL ModBlocks & Accessories	
Description	CPI P/N
ModBlock™, 33-Place Unit, Dual Channel <i>Includes a 33-place ModBlock™, external dual channel controller to allow future capacity upgrade to 66 places, 2 sample racks and qty. 250-100mL hinged-cap tubes.</i>	4370-010226
ModBlock™, 66-Place, Dual Channel <i>Includes two 48-place Blocks, external dual channel controller, 4 sample racks and 500-100mL hinged-cap tubes.</i>	4370-010228
ModBlock™, 33-Place Block - Upgrade <i>Includes 33-place ModBlock™, 2 sample racks and 250-100mL hinged-cap tubes.</i>	4370-010227
Sample Tubes, with hinged-caps, 100mL, 250/pk	4370-010202

ModBlock™ Distillation System

16 Position ModBlock Distillation System ideal for EPA methods 335.4

CPI's new ModBlock Distillation System has been designed to support methods for drinking, ground, surface and sea waters – as well as domestic and industrial wastes.



*CPI's Cyanide
Distillation
Glassware is
compatible with
the ModBlock
heating system.*



- 16 simultaneous distillations
- Superior temperature control using the CPI ModBlock Heating System
- PID temperature control with digital display
- 90% reduction in solvent usage and sample size versus conventional method (saves on waste disposal)
- Can also be used for trace metal digestions
- Glass & accessories can be used to upgrade existing 70ml ModBlock systems

NitroVap Sample Concentrator

Introducing the NitroVap – the sample concentrator/evaporator that ACCELERATES your sample preparation process!

- 48 Sample capacity - ideal for running 2 complete batches including blanks and QC
- Heated nitrogen for maximum speed of evaporation
- Small footprint (12" x 20") conserves bench space
- Gas flow and heater control allows user to set any gas temperature
- Hydraulic lift system for ease of use



Today's Chromatographs offer high levels of automation allowing for rapid, unattended sample analysis. Until now the bottleneck has been the laboratory's ability to prepare samples fast enough. Now your lab personnel can keep pace with the instruments. The NitroVap uses warmed nitrogen to gently evaporate solvent. This allows for fast, effective concentration of samples without the dangers of direct heat. The NitroVap is up to twice as fast as a standard nitrogen evaporator, and no direct heat means virtually no analyte loss!

TKN Digestion Block

*Solid Phase
Extraction & Other
Sample Preparation*

CPI's 20-Place TKN Digestion Block and Accessories

Range from room temperature to 450°C is able to satisfy all the requirements for standard and Kjeldahl digestions.

Sample size is up to 15 ml for liquid or 5 g for solids, digestion times vary according to the treated material and to the methods used. CPI TKN Digestion Systems allow you to work in reproducible conditions, with full safety, saving chemicals and work space in comparison to the traditional methods. The system is manufactured from stainless steel and protected by special resin and paints giving a high resistance to chemicals and mechanical corrosion. The heating block holding the test tubes allows an optimal distribution of heat at all the selected temperatures. The heater is sealed within the instrument to avoid damage in the case of accidental liquid spills.



**CPI P/N 4370-010250
TKN Digestion Block**

A dedicated microprocessor controller controls the temperature of the heating block. The temperature probe does not require manual calibration. An automated calibration is performed by the electronics on each run. This allow for very good precision and repeatability of tests. It is possible to upgrade the software for use with a personal computer.

The system can store up to 20 programs. For each program it is possible to select up to four temperatures with the corresponding durations. Per GLP (Good Laboratory Practice) requirements it is possible to send the data related to a performed test to a printer or to a personal computer for storage.



**CPI P/N 4370-010256
Optional 2-Tier
Support System**



**CPI P/N 4370-010251
Sample Rack**



**CPI P/N 4370-010255
Exhaust Manifold**



**CPI P/N 4370-010254
Fume Scrubber**

NOW SHIPPING!
EPA Approved Colitag™

colitag

The First Definitive Water Test System

Unprecedented Accuracy & Reliability
All In A Simple, One Step Process

The First Definitive Water Test System for Coliforms & E. coli.

CPI International is shipping the breakthrough Colitag™ water test system – the first truly definitive system for total coliforms and *E. coli*. One simple step. One accurate reading. Colitag™ gives you maximum confidence in your test results.

- Exceptional accuracy – eliminates false negatives.
- Patented self-adjusting pH resuscitates chlorine-damaged bacteria.
- Simultaneous testing for MUG-positive and MUG-negative *E. coli*.
- One step testing – just combine with water sample!
- Detects 1 CFU of coliform or *E. coli* in a 100mL sample.

See page 6 for more information.



**If You're Impressed With
Colitag™ Now, Wait Till You
Try It For Yourself... FREE!**

**Call 800-878-7654 x302
for details of this risk-
free offer of a free
sample of Colitag™**

TOX/AOX Products

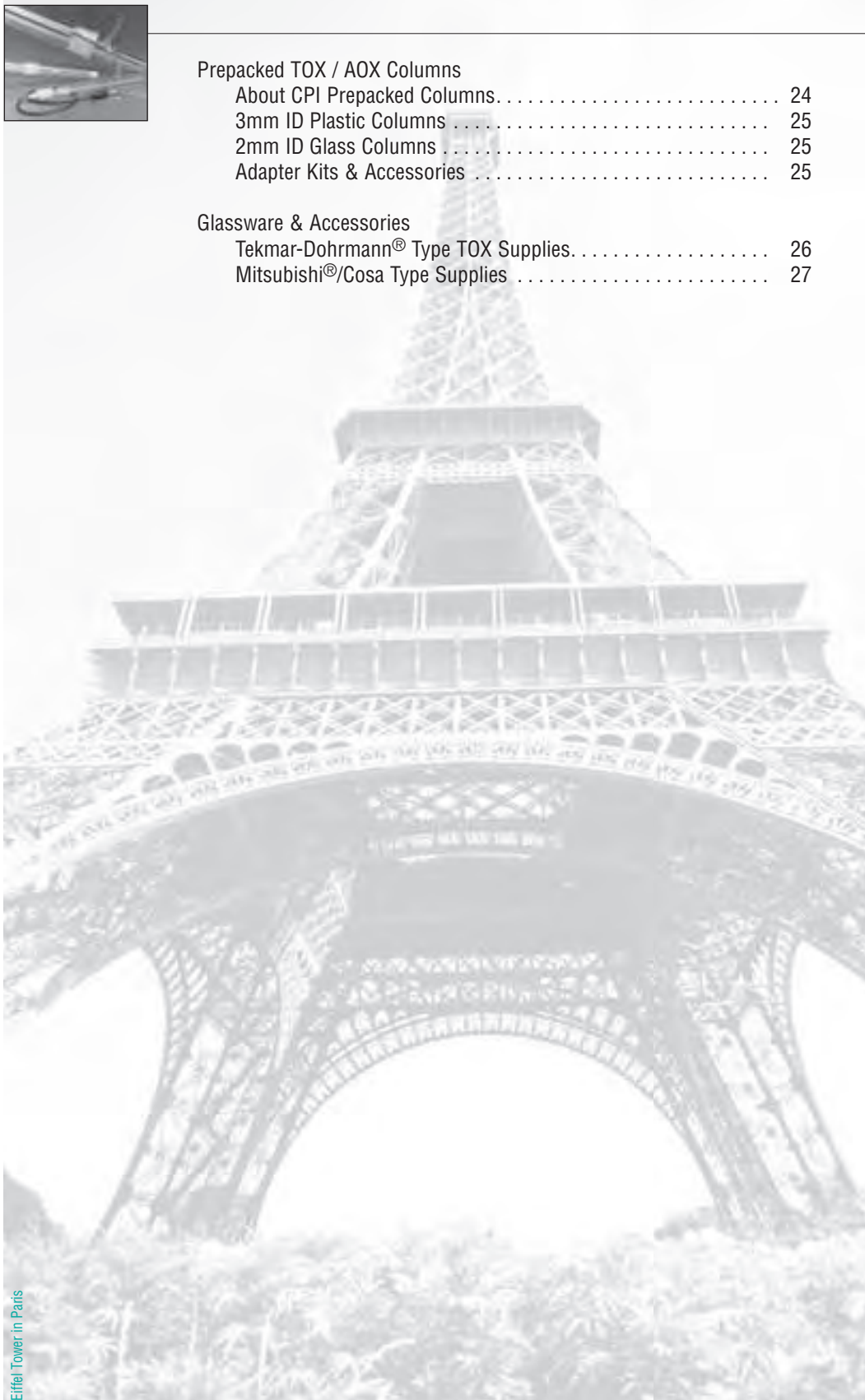


Prepacked TOX / AOX Columns	
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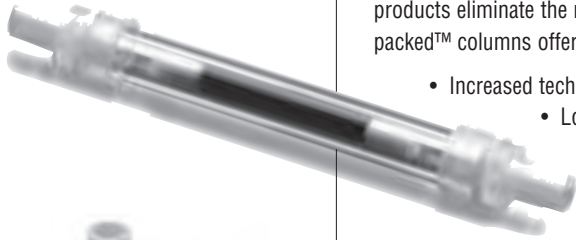
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The TOX/AOX products offered by CPI International are designed to provide accurate, reliable results that reduce the uncertainties present in many lab environments. CPI International offers consumable Glassware analysts need to operate TOX instrumentation, including our own patent-pending TOX/AOX columns for faster, more reproducible sample analysis.

Eiffel Tower in Paris



INDEX STANDARDS ICP AAS AAS GC TOX/AOX SPE COLITAG ORDERING



No Column Housings or O-Rings Needed!

Because CPI Prepacked TOX/AOX columns are self-contained, no column housings or o-rings are needed. These columns attach to your Dohrmann®, Mitsubishi®, or Euroglas® Adsorption unit via a simple adapter fitting. Once this fitting is in place, the columns plug in easily. Columns are joined together with simple press-fit connectors. This unique design prevents leaking and eliminates cleaning time.



CPI Prepacked TOX/AOX columns are self-contained prepacked columns for use in EPA Methods 9020 and 1650. These products eliminate the need to hand pack carbon columns in the laboratory. CPI Prepacked TOX/AOX columns eliminate traditional problems associated with hand packed columns such as inconsistent data, contaminated carbon, numerous parts, and tedious labor. In addition to replacing hand packed columns, these products eliminate the need for cumbersome column housings. High precision CPI Glass-packed™ and CPI-packed™ columns offer these advantages:

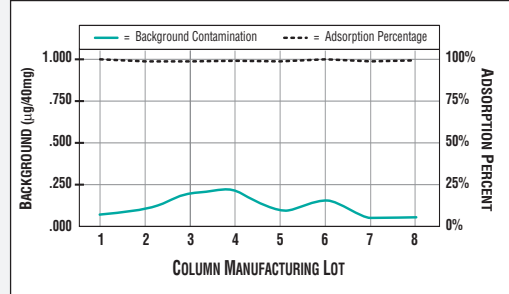
- Increased technician productivity
- Longer shelf life with reduced contamination risk
- Consistent and low backgrounds

CPI Prepacked TOX columns meet EPA Specifications and are now OEM equipment on all new Dohrmann® and Euroglas® TOX instruments.

What Makes CPI Prepacked Columns Unique?

Consistent, Low Blanks... Guaranteed.

Each CPI Prepacked column is filled with 40mg of our low background Granular Activated Carbon (GAC). The GAC and organic binder free cerafelt material are placed within an airtight nitrogen filled cavity, created by the body of the column and the removable caps on each end.

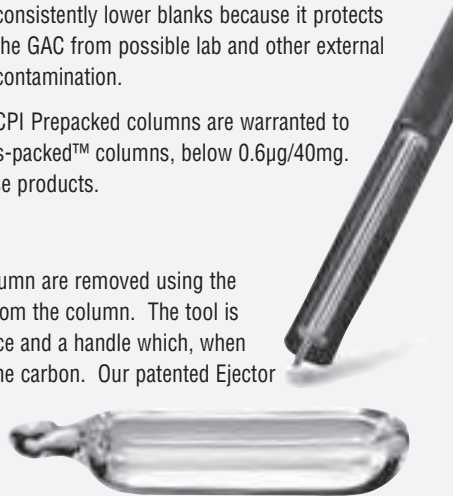


Prior to use, thin diaphragms in each of the caps are punctured to allow the sample to flow through. Once adsorption is complete, the caps are removed to eject the carbon into the sample boat. This design ensures longer shelf life and consistently lower blanks because it protects the GAC from possible lab and other external contamination.

CPI Prepacked columns are warranted to be below EPA 1.0µg/40mg blank specifications and CPI Glass-packed™ columns, below 0.6µg/40mg. We offer a money-back, 100% satisfaction guarantee on these products.

Easier Ejecting of Carbon into Quartz Boat...

Once adsorption is complete, the caps at each end of the column are removed using the CPI Ejector Tool. This tool is also used to eject the carbon from the column. The tool is comprised of a body which securely holds the column in place and a handle which, when squeezed, forces a rod through the column and thus ejects the carbon. Our patented Ejector Tool makes ejection of carbon much easier and helps prevent loss of sample due to an impacted column.



Easy Installation on All TOX Instruments.

A one-time purchase of an adapter kit is needed to use CPI Prepacked TOX/AOX columns. Each adapter kit contains five fittings for the adsorption module to accept prepacked columns, five column joiner fittings, a diaphragm puncturing tool, and our patented tool for removing column caps and ejecting carbon. Installation of the adsorption module fittings takes only minutes and does not alter the equipment factory warranty.



CPI offers separate adapter kits designed specifically for Dohrmann®, Mitsubishi® or Euroglas® TOX instruments. See Ordering information for adapter kits under 2mm and 3mm column products on opposite page.

Available in 2mm Glass and 3mm Plastic Formats...

CPI Glass-packed™ 2mm ID columns

These columns are prepacked glass columns with a 2mm ID for use with low level samples demanding the utmost in organic-free background. Backgrounds are guaranteed to be consistent and below 0.6µg/40mg. CPI 2mm ID glass prepacked columns produce maximum adsorption and minimal breakthrough. Use of this product requires the one-time purchase of an adapter kit listed below.

Description	CPI P/N	Dohrmann® P/N	Quantity
Columns and Adapter Kits			
CPI Glass-packed™ Columns, 2mm ID	634-001	080-152	100
Filter Housing	634-001F	n/a	100
<i>Filter housings are columns containing only cerafelt material and may be used in-line above carbon columns to prefilter particulates from sample.</i>			
Adapter Kit, Mitsubishi® TOX-10 & Sigma-10	634-071	n/a	5 ports
Adapter Kit, Dohrmann® DX-20	634-070	n/a	5 ports
Adapter Kit, Dohrmann® DX-2000	634-006	080-153	5 ports

CPI-packed™ 3mm ID Columns

These columns are prepacked plastic columns with a 3mm ID for use with most drinking water and well samples. Backgrounds are guaranteed to be consistent and below EPA 1.0µg/40mg blank specification. Use of this product requires the one-time purchase of an adapter kit listed below.

Description	CPI P/N	Dohrmann® P/N	Quantity
Columns and Adapter Kits			
CPI-packed™ TOX Columns, 3mm ID	4010-69	080-145	100
Filter Housing	4010-69F	080-151	100
<i>Filter housings are columns containing only cerafelt material and may be used in-line above carbon columns to prefilter particulates from sample.</i>			
Adapter Kit, Mitsubishi® TOX-10 & Sigma-10	4010-71	n/a	5 ports
Adapter Kit, Dohrmann® DX-20	4010-70	899-900	5 ports

Accessories and Replacement Parts - 2mm & 3mm Columns

Description	CPI P/N	Dohrmann® P/N	Quantity
Column Joiners	4010-170	899-907	5
Adsorption Module Fittings, Dohrmann® DX-20	4010-770	080-146	5
White Teflon Washers	4010-772	080-148	5
Adsorption Module Fittings, Mitsubishi®	4010-771	080-149	5
Diaphragm Puncturing Tool	4010-775	899-157	5
Extractor Handle, 2mm columns	634-801	080-156	1
Extractor Handle, 3mm columns	4010-801	080-143	1
Extractor Body, 2mm columns	634-802	080-155	1
Extractor Body, 3mm columns	4010-802	080-142	1
Replacement Rod, for 634-801	634-804	n/a	1
Replacement Rods, for 4010-801	4010-804	080-144	5

TOX/AOX Products



CPI Glass-packed™ TOX/AOX Columns offer consistent backgrounds below 0.6µg/40mg and maximum adsorption for samples run under EPA method 9020 and 1650.



Include CPI Prepacked TOX/AOX Columns in an Annual Savings Contract or Standing Order Program and save on other TOX/AOX consumable supplies.

TOX/AOX Products



CPI 2mm ID Glass and 3mm ID Plastic Prepacked TOX Columns, P/N's 634-001 & 4010-69. These products eliminate the need for column housings and tedious column packing. See pages 24 & 25 for additional information.



For technicians who prefer to pack their own columns, CPI offers low background granular activated carbon. Available in two purity grades: $\leq 0.4\mu\text{g}/40\text{mg}$ background halides (P/N 475-002) and $\leq 1.0\mu\text{g}/40\text{mg}$ background halides (P/N 475-001).



Quartz Sample Boat, CPI P/N 655-001. Also available for AOX analysis, P/N 657-001, and for the DX-2000, CPI P/N 4010-010010.



Black Chlorine Electrode, P/N 735-001. Green, white and red electrodes also available.

Tekmar®/Dohrmann® Type TOX / AOX Supplies

In addition to designing specialty prepacked columns for TOX/AOX analysis, CPI also offers a full range of quartz glassware, and other consumable supplies for Dohrmann® TOX/AOX instrumentation.

Description	CPI P/N	Dohrmann® P/N	Quantity
Prepacked Columns			
CPI-packed™ TOX Columns, 3mm ID	4010-69	080-145	100
CPI Glass-packed™ Columns, 2mm ID	634-001	080-152	100
<i>2mm ID glass prepacked columns produce maximum adsorbance and minimal breakthrough.</i>			
Adapter Kit, 4010-69 Columns	4010-70	899-900	5 ports
Adapter Kit, 634-001 Columns	634-070	n/a	5 ports
<i>A one time purchase of an Adapter Kit is needed to use CPI Prepacked Columns.</i>			
<i>See Pages 24 and 25 for information about CPI Prepacked TOX / AOX columns and related accessories.</i>			
Adsorption Module			
Activated Carbon ($\leq 0.4\mu\text{g}/40\text{mg}$)	475-002	n/a	15 grams
Activated Carbon ($\leq 1.0\mu\text{g}/40\text{mg}$)	475-001	511-877	15 grams
Cerafelt, 1/2 inch, 5 x 10 inch	485-001	521-030	5 x 10 inch
Empty Columns	515-001	899-623	50
O-Ring Column Housing	724-001	899-626	25
Ejection Tool Replacement Rods (for 715-005)	715-006	n/a	5
Microcoulometer			
Pyrolysis Tube, Quartz	635-001	511-531	1
Pyrolysis Tube, Quartz, for DX-2000	4010-010020	890-022	1
Pyrolysis Tube, New Style, for DX-2000	4010-010021	40-0028-024	1
Wool, Quartz, 5 grams/pk	645-001	511-735	5 grams
Sample Boat, Quartz (GAC)	655-001	899-624	10
Sample Boat, Quartz, for DX-2000	4010-010010	890-097	1
Sample Boat, Quartz (Liquid Samples)	658-001	511-782	5
Exit Insert, Quartz	665-001	511-608	5
Inlet Insert, Quartz	675-001	511-538	5
Inlet Insert, Quartz (with cutout)	676-001	511-610	5
Ball Coupler, Quartz	680-001	511-537	1
O-Ring, Inlet Insert	724-002	899-603	10
O-Ring, Exit Insert	724-006	511-762	10
O-Ring, Pyrolysis Tube	724-007	899-316	5
Black Electrode, Chlorine	735-001	520-965	1
Green Electrode, Chlorine	735-002	520-966	1
White Electrode, Chlorine	735-003	520-964	1
Red Electrode, Chlorine	735-004	520-967	1
Red/White Septa, Cored	724-009	517-798	10
TOX Organic Standard, 1ml	805-001	n/a	1
<i>Above standard derived from 92.8mg 2, 4, 6 Trichlorophenol in 100mL methanol; 500ppm @ 10μL.</i>			
AOX / EOX			
Pyrolysis Tube, AOX	637-001	888-088	1
Sample Boat, AOX	657-001	888-094	5
EOX/TX Direct Syringe Adapter	681-001	511-234	1
Sample Boat, Quartz (liquid samples)	658-001	511-782	5

Mitsubishi® / COSA Type TOX / AOX Supplies

TOX/AOX Products

Description P/N	CPI COSA® P/N	Mitsubishi®/	Quantity
Prepacked Columns			
CPI-packed™ TOX Columns, 3mm ID	4010-69	n/a	100
CPI Glass-packed™ Columns, 2mm ID	634-001	n/a	100
<i>2mm ID glass prepacked columns produce maximum adsorbance and minimal breakthrough.</i>			
Adapter Kit, 4010-69 Columns	4010-71	n/a	5 ports
Adapter Kit, 634-001 Columns	634-071	n/a	5 ports
<i>A one-time purchase of an Adapter Kit is needed to use CPI prepacked columns. See Pages 24 and 25 for information about CPI Prepacked TOX / AOX columns and related accessories.</i>			
Adsorption Module, TOX-10 & Sigma-10			
Activated Carbon (≤ 0.4µg/40mg)	475-002	TX070/06570	15 grams
Activated Carbon (≤ 1.0µg/40mg)	475-001	n/a	15 grams
Cerafelt, 1/2 inch	485-001	n/a	5 x 10 in
Ceramic Wool	495-001	TX067/06540	5 x 10 in
Empty Columns	525-001	TX057/06450	30
O-Rings, Column Housing	724-001	TX060/06310	25
TOX-10 Microcoulometer			
Pyrolysis Tube, for TOX-10	636-001	TX010/06170	1
Pyrolysis Tube, 2-Part, for TOX-10	4010-63	n/a/06171	1
Pyrolysis Tube Body, for TOX-10	4010-64	n/a/06174	1
Pyrolysis Tube Insert, for TOX-10	4010-65	n/a/06172	1
O-Ring for 4010-63, 4010-73 and 636-001	4010-62	n/a/06851	12
Guide Tube	4010-67	TX011/06220	1
Wool, Quartz	645-001	TNQWL/06175	5 grams
Sample Boats, Quartz	657-001	SXSMBT/06280	5
TOX Organic Standard, 1mL	805-001	n/a	1
<i>Above standard derived from 92.8mg 2, 4, 6 Trichlorophenol in 100mL methanol; 500ppm @ 10µL.</i>			
Sigma-10 & TOX-100 Microcoulometer			
Pyrolysis Tube, 2-part, for Sigma-10	4010-73	17000&17010	1
Pyrolysis Tube Body, for Sigma-10	4010-74	17000	1
Pyrolysis Tube Insert, for Sigma-10	4010-75	n/a/17010	1
Single Pyrolysis tube, Sigma-10	4010-010049	17020	1
Pyrolysis tube, TOX-100	4010-010114	n/a	1
Wool, Quartz	645-001	TNQWL/06175	5 grams
Sample Boats, Quartz	657-001	SXSMBT/06280	5
TOX Organic Standard, 1mL	805-001	n/a	1
<i>Above standard derived from 92.8mg 2, 4, 6 Trichlorophenol in 100mL methanol; 500ppm @ 10µL.</i>			
Guide Tube, Sigma-10 only	4010-010050	17030	1

For technicians who prefer to pack their own columns, CPI offers low background granular activated carbon. Available in two purity grades; ≤ 0.4µg/40mg background halides (P/N 475-002) and ≤ 1.0 µg/40mg background halides (P/N 475-001).



Quartz Sample Boats, CPI P/N 657-001.



CPI 2mm ID Glass and 3mm ID Plastic Prepacked TOX Columns, P/N's 634-001 & 4010-69. These products eliminate the need for column housings and tedious column packing. See pages 24 & 25 for additional information.



The Solid Leader... In Solid Phase Extraction

**Ideal For Any
47mm Or
90mm
SPE Disk
Extraction**

- Integrated 3-way Valve System for Eluting without Disassembly
- Easy Conversion from 47mm to 90mm Disks
- Unlimited Expandability through Linking
- Available as a Complete System or Station-by-Station
- Exceptional Durability, Stability, and Inertness
- Multiple Vessel Versatility, Compact Footprint
- User-Friendly Design for Maximum Productivity
- Compatibility with all SPE Sample Prep Methods
- Complete Satisfaction Warranty



Flexibility...

The Accuprep 7000™ Manifold is available complete or station-by-station. You may purchase the Manifold complete with six extraction stations or purchase the six-position manifold rack and one or more stations as desired. Accuprep 7000™ manifolds are designed to be linked in sequence to provide unlimited expandability for your extraction needs. **See page 14 for more information.**

Looking For A Rapid Eluent Evaporation Device?



Check out GPI's new Quick Dry Module for fast Eluent Evaporation!

See page 13.

Chromatography (GC, GC/MS & LC/MS)

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Autobahn in Germany

Gas Chromatography (GC & GC/MS)



Checking for the right fit is easy!

“Large-horn” multipliers have a diameter about the size of a dime; whereas “small-horn” multipliers are noticeably thinner.

CPI offers only the highest quality Electron Multipliers from OEM suppliers. In addition to product excellence, we are also concerned about the ease of your buying experience.

For example, Hewlett Packard 5972 and earlier instrumentation typically have one of two mounting bracket formats. You can use the “dime-diameter” check shown here to ensure the perfect size and fit of your next Multiplier.



CPI offers both “small size” and “large size” replacement elements.

Electron Multipliers

CPI offers a complete selection of continuous dynode electron multipliers for use in a variety of analytical instruments and applications, including GC/MS, LC/MS, residual gas analyzers and other instrumentation. These high performance, long life electron multipliers are engineered for maximum reliability, from low gain analog amplification to high gain pulse counting requirements.

All multipliers are manufactured in an ISO 9002 compliant environment and are tested for multiple QC parameters prior to shipping, guaranteeing dependability and performance. These multipliers are air-stable and have an indefinite shelf life in their original packaging. Many models are now original equipment on popular OEM instrumentation. All multipliers are backed by a total customer service philosophy and guarantee.

CPI electron multipliers for HP®/Agilent® GC/MS are designed to give you several performance benefits over the standard element...

Vented Anode – CPI multipliers have vent holes to the anode of the detector. These vent holes allow for residual gases in the detector channel and anode to be removed during pumping, improving performance and life of the detector.

Grid – CPI multipliers have a grid on the front of the horn causing all secondary electrons to travel down the detector channel. This increases the signal-to-noise ratio and overall performance of the detector.

Lower Operating Voltage – CPI multipliers operate at a lower voltage than the standard HP®/Agilent® element, increasing overall lifetime.

Increased Signal-to-Noise Ratio – In an HP/Agilent instrument the signal-to-noise of the instrument is increased approximately 25%, due to the mechanical design changes incorporated into the product, including the vented anode and grid.

Robust Design – CPI multipliers have a robust stainless steel frame to protect the glass detector from damage.

Hewlett-Packard®/ Agilent® Type Multipliers

Description	CPI P/N	Replaces HP® P/N	
HP/Agilent 5972/71/71A MSD & GCD			
Replacement Horn only, Small size	4200-010200	05971-80103	
Replacement Horn only, Large size	4200-010201	05971-80102	
HP/Agilent 5973			
Replacement Horn only, Small size	4200-010200	05971-80103	
Complete assembly, ETP Type	4200-010180		
HP/Agilent 5970/5993B MSD			
One-piece multiplier	4200-010202	05970-20097	
Replacement Horn only, Small size	4200-010200	05970-80103	
Replacement Horn only, Large size	4200-010201		HP®/Agilent® Multiplier for 5970 one-piece model. CPI P/N 4200-010202
HP/Agilent 5989 MS Engine			
One-piece multiplier	4200-010203		
(includes conversion dynode)			
Replacement Horn only, Small size	4200-010200	05971-80103	
Replacement Horn only, Large size	4200-010201	G1099-80001	
HP/Agilent 5988/88A & 5985/87 - 4 lead	4200-08	05985-60180	
HP/Agilent 5988/88A & 5985/87 - 3 lead	4200-010065	1970-0063	
HP/Agilent 5930/80/81/82/83/84/85/	4200-010065	1970-0063	
HP/Agilent 4500 & 7500 ICP-MS			
<i>See page 54 for these multipliers.</i>			
			One-piece Multiplier for HP®/Agilent® 5989 MS Engine. CPI P/N 4200-010203

Electron Multipliers

Thermo-Finnigan® Type Multipliers

Description	CPI P/N	Replaces Thermo P/N
TSQ70 w/20kv dynode, TSQ700, ITD700,800, ITS40, Magnum		
Replacement glass element, unmounted	4200-010206	
Replacement element, Mounted	4200-010204	94022-98049/94011-60052
Replacement element, for K and M Mount	4200-010205	94022-98047
TSQ70 & PPINICI Multipliers		
TSQ70, ITMS, PPINICI Incos 50	4200-010207	
PPINICI 4000, 4500, 4600	4200-010208	
PPINICI 5100	4200-010209	
1015 on axis, 3000, & OWA (pre 8/81)	4200-010077	30004-60160
1015 off axis, 3000, 3100, 3200, 4000,	4200-010078	01504-60110
4500, 4600 OWA post 8/81	4200-010076	40007-98020/30004-60050
Finnigan MAT95-organic mass spec, 8400 series	4200-010116	
CH7, CH8	4200-010260	
PolarisQ, GCQ, LCQ deca/duo, Trace MSQ, LTQ		
Replacement element only	4200-010205	94022-98047
Mount assembly and replacement element	4200-010241	
SSQ, TSQ7000, TSQ Quantum (element only)	4200-010205	94022-98047
TRACE DSQ		
Replacement element only	4200-010244	
Mount assembly and replacement element	4200-010245	
SOLA ICP	4200-010079	

Look Familiar?

Pictured below are popular multipliers for Thermo-Finnigan® instrumentation:



Multiplier for PPINICI 4000, 4500, 4600. All PPINICI Multipliers include the conversion dynodes.
CPI P/N 4200-010208



Mount Assembly, including multiplier for Polaris Q, GCQ, LCQ DECA/DUO, Trace MSQ, LTQ.
CPI P/N 4200-010241



Replacement Element for Polaris Q, GCQ, LCQ DECA/DUO, Trace MSQ, LTQ.
CPI P/N 4200-010205



Mount Assembly, including multiplier for Trace DSQ.
CPI P/N 4200-010245



Replacement Element for Trace DSQ.
CPI P/N 4200-010244

► CPI Multiplier Performance Point Multiplier Pre-Conditioning

To maximize the lifetime of a multiplier it should be pre-conditioned. During this process, loosely bonded water molecules are released from the surface. To perform pre-conditioning, a multiplier should be placed under vacuum. It is recommended that a vacuum of 10^6 Torr or better be used. Once the appropriate vacuum is reached a small input should be applied to the multiplier. In counting mode approximately 15,000 counts/second is desirable. In current mode approximately .1uAmp is needed. The multiplier voltage should be slowly raised to reach an appropriate gain level. In counting this should be approximately 10^7 . In current mode this should be approximately 10^5 . The multiplier should be run in this state for several hours. This should be done in order to avoid a rapid release of water molecules. If the water molecules release rapidly then the multiplier surface can be permanently damaged, thus shortening the life of the detector.

Gas Chromatography (GC & GC/MS)



Replacement Element for K and M Type Multipliers, for TSQ70 (20 kv dynode), TSQ700, ITD700/800, ITS40, Magnum, SSQ, TSQ7000 and TSQ Quantum.
CPI P/N 4200-010205



Replacement Glass Element, Unmounted for TSQ70 (20 kv dynode), TSQ700, ITD700/800, ITS40, Magnum, SSQ, TSQ7000 and TSQ Quantum.
CPI P/N 4200-010206



CPI P/N 4200-010206 Mounted In Frame, complete unit CPI P/N 4200-010204.

Ask About CPI Quantity Purchase And Standing Order Discounts On Electron Multipliers!

Gas Chromatography (GC & GC/MS)



Multiplier for Varian® Saturn 2000 Series. CPI P/N 4200-010211



Multiplier for Varian® Saturn I, II, & III, Mounted. CPI P/N 4200-010204

► **CPI Multiplier Performance Point**

Multiplier Cleaning

In the event that a multiplier becomes contaminated with lint, dust, or other particulate the multiplier should be flushed with either isopropyl or methanol. The unit can then be blown with dry nitrogen and baked at 150°C until dry. Multipliers should not be cleaned in any acid, this would have a detrimental effect on its lifetime and performance.

Electron Multipliers

Varian® Type Multipliers

Description	CPI P/N	Replaces Varian® P/N
Saturn 2000, 2100, 2200	4200-010211	
Saturn I & II (unmounted)	4200-010206	
Saturn I, II & III (mounted)	4200-010204	03-920490-00
1200, Triple Quad	4200-010246	
Auger Analyzer	4200-010247	
Ultramass		
<i>See page 54 for this multiplier.</i>		



Replacement Element for above Saturn I & II Multiplier. CPI P/N 4200-010206



Multiplier for Varian® Auger Analyzer. CPI P/N 4200-010247

PerkinElmer®/ Sciex®/ API® Type Multipliers

Description	CPI P/N	Replaces PE®/Sciex®/API P/N
Ion Trap	4200-010204	N621-2429
Qmass	4200-010212	N633-1320
API III LC/MS	4200-010219	014032A
API 4000/3000 & 100, 200, 300 series	4200-010218	020048B
API 2000	4200-010243	
ELAN ICP-MS Multipliers		
<i>See page 54 for these multipliers.</i>		



Multiplier for PE® Ion Trap. CPI P/N 4200-010204



Multiplier for PE® Qmass. CPI P/N 4200-010212



Multiplier for API® III LC/MS. Includes Sciex® Leads. CPI P/N 4200-010219



Multiplier for API® 4000/3000 & 100, 200, 300 Series. CPI P/N 4200-010218



Multiplier for API® 2000. CPI P/N 4200-010243

Multipliers for Other MS Systems

Description	CPI P/N	Replaces OEM P/N
Amptek		
Amptektron MD501	4200-010248	
Amptektron MD502	4200-010249	
Balzers		
QMG 511	4200-010088	
Prizma	4200-010250	
ABB Extrel		
Quad - Analog only	4200-010089	U-1150
Quad - Pulse & Analog	4200-010087	U-1149
ELQ400-Analog, Benchmark LCMS, Questor	4200-010091	U-411
MEXM / EXM System, ELQ400 - Pulse, C50	4200-010216	Y-61
Finnigan MAT/Varian MAT		
CH5	4200-010093	422097
111,112,112S, 212,311, 312, 711, 8020	4200-010094	422097
CH3, CH4, CH4B	4200-010095	422093
Hitachi		
RMU-6D	4200-010100	
Inficon RGA		
XPRII	4200-010251	
Mass Analyzer Products		
MAP215-50	4200-010252	
Shimadzu		
ICPM8500	4200-010253	
QP5050	4200-010254	
2010/QP8000/QP5000	4200-010255	
Stanford Research Systems		
RGA	4200-010256	
Thermo Onix (VG Gas Analysis)		
RGA Analog	4200-010257	
UTI		
Analog (mounted) - 100C	4200-010214	
Discrete Dynode (Cube) - 100C	4200-010215	
Vacuum Technologies		
Aerovac RGA	4200-010258	
V&F Gas Analysis		
CIMS 500	4200-010230	
VG Microtech		
Clam IV Analyzer	4200-010259	
Waters		
Integrity Mass Spectrometer	4200-010217	

Contact CPI for information on multipliers not listed here - many more models available.

► CPI Multiplier Performance Point

Multiplier Vacuum Baking

Vacuum baking is used as a method of decreasing water molecule adsorption on the emissive surface of channel electron multipliers. When water molecules are on the emissive surface they are released during multiplier use. If the molecules are released too quickly permanent damage may occur to the emissive surface.

When vacuum baking CPI recommends baking at no hotter than 250°C for 12-15 hours. During this time period water molecules are slowly released from the emissive surface in a safe manner. It is important to vacuum bake in a clean environment. If other materials in the vacuum bake outgas, the channel electron multiplier may absorb these gases and the emissive surface could be adversely effected.

CPI recommends that all units be vacuum baked. This helps pre-condition the unit and increase lifetime.



Amptektron MD 501 Multiplier.
CPI P/N 4200-010248



Inficon XPRII Multiplier.
CPI P/N 4200-010251



MAP215-50 Multiplier.
CPI P/N 4200-010252



UTI (MKS) Analog 100C.
CPI P/N 4200-010214



UTI (MKS) Discrete Dynode (cube) 100C.
CPI P/N 4200-010215

Gas Chromatography (GC & GC/MS)



ABB Extrel MEXM/EXM, ELQ400, C50 Multiplier.
CPI P/N 4200-010216



Balzers Prizma Multiplier.
CPI P/N 4200-010250

► CPI Multiplier Performance Point

Multiplier Shelf Life

It is ideal to store the multiplier in vacuum, but not required. These lead glass multipliers are air stable devices that can be stored indefinitely, as long as the units are kept out of direct sunlight, dry and kept in their original sealed bags prior to use. CPI fully warranties all multipliers for shelf life.



CIMS 500 Multiplier.
CPI P/N 4200-010230



Waters LC/MS Integrity Multiplier.
CPI P/N 4200-010217

Gas Chromatography (GC & GC/MS)



CPI offers a complete selection of PID lamps to meet your needs.

Save up to 35% on PID lamps with a CPI Annual Savings Contract. Standing Order Programs are also available for efficiency and additional cost savings.

PID Lamps & Accessories

As the nation's largest supplier of PID lamps, we are determined to be the highest value source in today's market.

CPI offers a complete selection of high quality, long life, low pressure gas discharge lamps for use in photoionization detectors and trace gas analyzers. These PID lamps are direct OEM replacements.

These lamps incorporate a unique high temperature seal design which allows them to be processed at high temperatures. This process results in higher lamp to lamp consistency, enhanced performance and long life.

CPI ensures unsurpassed performance due to only the highest purity metals, window materials and gases. Every lamp must pass a series of stringent tests and measurements prior to shipment to your laboratory.

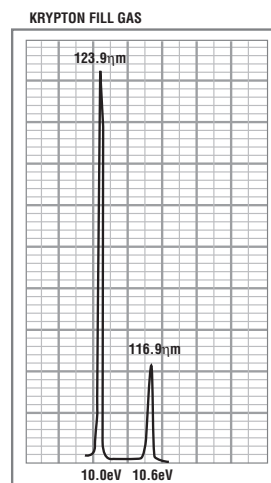
Only CPI can offer today's best PID lamp value, best warranty terms, and technical service to support your application.

Spectral Output and Relative Intensity

The eV rating of the lamp is determined by the lamp's spectral output. The spectral output of the lamp is determined by the fill gas and the transmission characteristics of the window material. The spectral output of the gas used most frequently is shown the graph opposite. The eV rating and wavelength are associated through Planck's Constant: $\lambda(m) = 1.2395(10^{-6})/eV$

As seen from the graph showing krypton, both the 123.9nm and 116.9nm lines are present. Because of this the 10.0eV and 10.6 eV lamps are interchangeable.

Other fill gases such as hydrogen and oxygen have been tested and found to result in shortened lamp life, thus they are not used.



Buy your next PID lamp from CPI and we'll Guarantee:

Competitive Pricing

Let us know your annual usage and we will provide a competitive quotation. Our prices are significantly lower than the OEM's and other suppliers.

Next-Day Delivery

Our Next-Day Delivery Service ensures you don't have instrument down time. Lamps are always in stock and never sit on our shelf for more than 10 days.

Lamp Performance

We warrant that lamps will light, stabilize and meet manufacturer's life expectancy in your instrumentation. CPI's pro-rated PID lamp warranty is the most comprehensive available in the industry today!

Savings on other CPI Supplies

Select CPI as your PID lamp supplier and you'll earn discounts on other products for Organics and Inorganics. Call for additional information.

PID Lamps & Accessories

Small Outline PID Lamps

Description	CPI P/N	OEM P/N
Lamp for Varian®, HP®, OI®, Tremetrics® (Tracor®), Finnigan®, SRI® 10.0 eV, small outline	4080-02	00-997396-06/ 76497-0012/ 181180/ 5182-0506
Lamp for Photovac® 10.6 eV, for Microtip®	4080-15	390011

Call for pricing and availability of 9.6eV, 10.6eV and 11.8eV lamps.

New!



PID lamp for portable Photovac®, Microtip®, 10.6 eV.
CPI P/N 4080-15

Count on CPI for OEM direct replacement lamps for your Photovac® Microtip® hand held PID. These lamps are 10.6 eV and designed for maximum life and sensitivity in your Photovac® instrumentation.



Large Outline PID Lamps

Description	CPI P/N	OEM P/N
Lamps for PerkinElmer®, hnu®, and older models of SRI® & HP® 10.2 eV, large outline	4080-12	0330-3599 81-101-102
11.7 eV, large outline <i>11.7 eV Lamps are for use with hnu® PI101 portables.</i>	4080-13	81-101-117



CPI offers both 10.2 eV and 11.7 eV large outline PID lamps for hnu® PI101 Photoionizers.

Gas Chromatography (GC & GC/MS)



Small Outline Lamp for Varian® HP®, OI®, SRI® and Tremetrics® (Tracor®).
CPI P/N 4080-02

New!

Improved Linearity and Lifetime!

Our OEM manufacturer of CPI PID lamp P/N 4080-02 has improved the optic path, lens seal and base shape to provide better linearity and lifetime! You will automatically receive this improved product on your next order of CPI P/N 4080-02!



Large outline 10.2 eV PID lamp, for PE®, SRI®, hnu®.
CPI P/N 4080-12

Gas Chromatography (GC & GC/MS)

PID Accessories

To help improve PID lamp performance and life, we recommend our Lamp Cleaning Kit and O-Rings, including our new Kalrez® O-Ring for maximum sealing potential and durability.



Viton® and Kalrez® O-Rings. CPI P/N's 4080-21 and 4080-23



PID lamp cleaning kit. CPI P/N 4080-20

Description	CPI P/N	OEM P/N
PID Lamp Cleaning Kit <i>Maximize lamp sensitivity and life with periodic cleaning. The normal operation of a PID Lamp results in a UV absorbing deposit condensing on the lamp window. This kit includes supplies needed to perform proper cleaning of PID lamps.</i>	4080-20	00-997396-98
Viton® O-Rings, Small Outline, 5/pk	4080-21	255679
Kalrez® O-Ring, Small Outline, 1/pk <i>These high-performance Kalrez® O-Rings are recommended for PID systems due to low out gassing potential, long life, and excellent sealing capabilities under thermal conditions.</i>	4080-23	00-997396-45
1/8" Graphite Ferrule, 10/pk	4200-109	76458-0002

Maximizing life from your PID lamps

Cleaning Procedures

Frequent proper cleaning is the best way to improve lamp life and maintain maximum sensitivity. Note that not all UV absorbing deposits which cause lower sensitivity can be seen on the window. Thus, a lamp may need cleaning even if no deposit is visible. Allow sufficient time for your PID detector to cool prior to removing the lamp. If the lamp is removed while still hot, it can increase the chance of cracks developing in the window or seals. **Never touch the magnesium fluoride window with your bare fingers**

1. Pour distilled water into two petri dishes. Pour methanol into 3rd petri dish.
2. Immerse base of lamp to be cleaned momentarily into first dish of distilled water.
3. Place a wet swab into polishing compound, allowing of the material to adhere to the cotton tip.
4. Using small circular motions, rub polishing compound onto magnesium fluoride window. The proper ratio of polishing compound to water will produce a slurry mixture. NOTE: Do not exert excessive force onto the magnesium fluoride window. Window material can be permanently damaged by misuse.
5. Continue working polishing compound around window for approx. one minute. It may be necessary to add polishing compound and/or water to maintain proper consistency.
6. Dip lamp base into first petri dish of distilled water and with a gentle lapping motion remove all excess polishing compound from around window and base.
7. Next dip lamp base into second dish of distilled water. With a CLEAN wet cotton swab, remove any trace amounts of polishing material.
8. Remove excess water from base with kimwipe. Immerse clean base into dish containing methanol.
9. Quickly dry window with another clean kimwipe. Do not allow methanol to air dry as this will leave a film on magnesium fluoride window and greatly reduce the transmittal of the window.
10. Hold the lamp up to a light source, with the window at an acute angle to the light so that the window surface appears reflective. This will allow you to easily spot any visible UV absorbing deposit remaining.
11. Distilled water and methanol should be changed after cleaning 2-3 lamps. Petri dishes should be cleaned prior to adding fresh water and methanol.
12. When reinstalling the lamp in the detector, inspect the lamp sealing o-ring. O-rings should be replaced with every lamp or every 3 months. Also take great care when tightening the lamp housing. Over tightening the housing will cause the lamp window to crack.

Current & Temperature Settings

To maximize lamp life, ensure that the PID detector temperature is kept at 250°C or lower. Higher temperatures, or fluxuating temperatures, stress the lamp. If your instrumentation allows you to adjust the lamp current, always start a new lamp at the lowest possible setting to achieve your MDL. If a drop in sensitivity occurs, clean the lamp before resorting to increasing the current.

Storage

CPI ensures that our PID lamps stay in our warehouse for only 10 days before shipment to your lab. We recommend that you not store PID lamps more than 60 days, to ensure the lamps maintain maximum fill gas.

NitroVap Sample Concentrator

Introducing the NitroVap - the sample concentrator/evaporator that ACCELERATES your sample preparation process!

- 48 Sample capacity - ideal for running 2 complete batches including blanks and QC
- Heated nitrogen for maximum speed of evaporation
- Small footprint (12"x 20") conserves bench space
- Gas flow and heater control allows user to set any gas temperature
- Hydraulic lift system for ease of use



Today's Chromatographs offer high levels of automation allowing for rapid, unattended sample analysis. Until now the bottleneck has been the laboratory's ability to prepare samples fast enough. Now your lab personnel can keep pace with the instruments. The NitroVap uses warmed nitrogen to gently evaporate solvent. This allows for fast, effective concentration of samples without the dangers of direct heat. The NitroVap is up to twice as fast as a standard nitrogen evaporator, and no direct heat means virtually no analytic loss!

Gas Chromatography (GC & GC/MS)

MS-NoVent™ GC/MS Column System

Reliable GC Column Changing in Minutes- without Breaking MS Vacuum...

The specialized design of the MS-NoVent system from CPI allows you to reliably change a GC column or perform GC maintenance without bringing down the mass spectrometer. Eliminating the time-consuming process of venting the MS during a column change also ensures that the integrity of the system is maintained. Because the MS-NoVent system uses a moderate helium purge and special fused silica flow valve to guarantee an air-free environment within the MS, there is no risk of water or other contaminants entering is present. With the MS-NoVent, the mass spectrometer can be operational in minutes after a column change or routine GC maintenance, avoiding the time-consuming and variable process of restoring vacuum and desired MS sensitivity levels.



Change GC Columns in Minutes without Breaking the MS System Vacuum!

- Save Hours of Down Time
- Maintain an Inert Environment
- No Risk of Damaging Ion Source

MS-NoVent™ GC/MS Column System

Description	CPI P/N
MS-NoVent	
MS-NoVent System, for HP® 6890 GC	4200-010030
MS-NoVent System, for HP® 5890 and earlier GC's	4200-010029

Note: A restrictor (below) corresponding to the MS model must also be ordered.

Restrictors	
Restrictor, for HP® 5970 MS	4200-010027
Restrictor, for HP® 5972/5971 MS	4200-010028
Restrictor, for HP® 5973 MS	4200-010026

MS- NoVent Systems are available for Hewlett-Packard® 5890 and newer 6890 GC/MS Systems with EPC

AA Lamps From CPI International...



- Narrow line width for maximum sensitivity & linearity
- Noise-free operation
- Long running life and 5-year shelf life
- 2-year, 5,000 mA-hour warranty



Get A Free 1,000 ppm, 500ml AA Standard With Each Lamp Ordered!

CPI International offers a complete selection of hollow cathode lamps for all popular spectrometer models. From 1.5" diameter lamps for Varian, TJA, GBC and other instruments, to 2" diameter lamps for PerkinElmer spectrometers, to our full line of coded and non-coded lamps, CPI has the widest selection of lamps that are high in quality and competitive in cost.

Certified Quality

All CPI International standards are prepared from high-purity starting material, sub-boiling distilled acids and 18-megaohm de-ionized water. We only use Class A volumetric labware calibrated under NIST guidelines. Starting materials are weighed to ± 0.1 mg on analytical balances calibrated by NIST-traceable Class F weights. The acids and de-ionized water are regularly tested by ICP-MS to ensure purity. Each standard is packed in an HDPE (LDPE when applicable) Passport IP2 bottle, pre-leached and secured with a heat-shrink seal.

Atomic Absorption (AAS)



CPI Graphite Tubes	
About CPI Graphite Furnace Tubes	40
PerkinElmer® Type	40
Varian® Type	41
TJA® Type	Call for price
GBC® Type	41
Hitachi® Type	41
ATI (Unicam®) Type	41
Hollow Cathode AA Lamps	
1.5" (37mm) for Varian®, TJA® and Other	42
2.0" (50mm) for PerkinElmer®	43
Matrix Modifiers	44
AA Sample Cups	44
AA Single-Element Standards	45
Ionization Buffers	45
Releasing Agents	45
Sampling Capillaries	Call for price
Quartz Windows	Call for price
Mercury/Hydride Cells	Call for price
D2 Lamps & Photomultiplier Tubes	Call for price

Table of Contents

Used for analyzing trace amounts of metals, atomic absorption spectroscopy continues to be a very important analytical technique. The procedures involved in AAS require precision components and reliable consumables, which CPI International offers in abundance. From graphite tubes to quartz windows, matrix modifiers to sampling probes, CPI International stocks all the products that may be required in your particular AAS applications.

Sydney Opera House in Australia

Atomic Absorption



Thanks to your support, CPI has become a leading source for high quality Graphite Furnace Tubes...

In addition to offering your lab excellent value in Graphite Tubes for PerkinElmer®, Varian®, TJA®, and Hitachi® AA's, we are pleased to expand our line to include tubes for GBC®, and ATI/Unicam® furnaces.



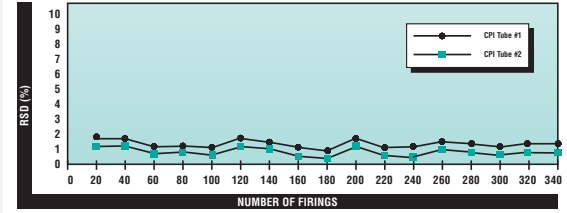
CPI Forked Tubes and Platforms, P/N 4090-09 (Shown here with the preinserted platform removed).

These tubes are shipped with pre-inserted platforms for your convenience. Since the platform contacts the tube wall only at each corner, atomization of the sample occurs over a shorter time, producing sharper, taller peaks. The solid pyrolytic graphite platform, and lack of exposed base graphite material in the tube, help contribute to longer tube life.

Graphite Furnace Tubes

Quality Raw Materials for Long Life and Performance

CPI graphite tubes are produced from one of the highest grades of spectrally pure graphite available today. Prior to use, the base material is tested for purity, constant density and electrical resistivity. This critical screening ensures that our tubes are free from trace metal contamination and provide maximum, consistent life and performance in your instrument.



PerkinElmer® Type Graphite Products

Description	CPI P/N	Replaces PE® P/N
Pre-inserted Platform Tubes, Pyro Coated, 50/pk	4090-0506	B010-9322 / B010-9324
Pre-inserted Platform Tubes, Pyro Coated, 20/pk	4090-10	B300-1254 / B300-1256
Pre-inserted Platform Tubes, Pyro Coated, 10/pk	4090-0304	B012-1092 / B012-1091
Pre-inserted Platform Tubes, Pyro Coated, 5/pk	4090-26	B013-7111 / B013-7112
<i>CPI recommends pre-inserted platform tubes for ease of use and reproducibility.</i>		
Platform Tubes, Pyro Coated, 50/pk	4090-05	B010-9322
Platform Tubes, Pyro Coated, 10/pk	4090-03	B012-1092
Platforms, Solid, Pyro, 50/pk	4090-06	B010-9324
Platforms, Solid, Pyro, 10/pk	4090-04	B012-1091
Forked Tubes and Platforms, Pyro Coated, 20/pk	4090-09	B050-5057
Standard Tubes, Pyro Coated, 50/pk	4090-08	B009-1504
Standard Tubes, Pyro Coated 20/pk	4090-010016	B300-0342
Standard Tubes, Pyro Coated, 10/pk	4090-07	B013-5653
Standard Tubes, Pyro Coated, 5/pk	4090-010017	B010-5197
Standard Tubes, Uncoated, 50/pk	4090-12	B007-0699
Standard Tubes, Uncoated, 10/pk	4090-14	n/a
Zeeman Contact Sets, 1 set	4090-15A	B011-6823
Zeeman Contact Sets, 5 sets	4090-15	B018-0361
Regular Contact Sets, 1 set	4090-16A	B012-8490
Regular Contact Sets, 5 sets	4090-16	B018-0363

Performance of CPI Graphite Tubes

The following results were achieved in a study comparing the performance of L'vov tubes.

	Less Expensive Aftermarket Brand	CPI Tubes
Lifetime (till out of spec)	115	415
Lifetime (test)	269	431
Lifetime (till failure)	269	550
Absorption Signal (ave)	0.281	0.337
Absorption Signal Failure	0.250@115	0.250@415

Summary:

Each tube was tested using Cr, and a combination of lifetime and absorption signal was observed. The element Cr was chosen because of its demanding temperature profile (2,650 degrees C). A lab fortified blank was used to eliminate bias. Actual number of firings may be lower given a "real world" sample matrix.

The less expensive aftermarket tubes did not meet CPI specifications for life, sensitivity or absorption signal. These parts, manufactured in China, exhibit greater variances in performance and life. CPI tubes demonstrated excellent performance of 550 firings.

Graphite Furnace Tubes

Varian® Type Graphite Products

Description	CPI P/N	Replaces Varian® P/N
Pre-Inserted Forked Tubes & Platforms, Pyro Coated, 10/pk	4090-2324D	n/a
Plateau Tubes, Pyro Coated, 10/pk	4090-20	63-100011-00
Platforms, Solid Pyro, 10/pk	4090-21	63-100013-00
Partitioned Tubes, Pyro Coated, 10/pk <i>Good sensitivity & accuracy, with longer life due to a harder pyrolytic coating</i>	4090-25D	63-100012-00
Standard Contacts, 1 set	4090-30	63-100016-00
Zeeman Contacts, 1 set	4090-31	63-100017-00
Standard Shroud, 1/pk	4090-33	63-100018-00
Zeeman Shroud, 1/pk	4090-32	63-100019-00

GBC® Type Graphite Products

Description	CPI P/N	Replaces GBC® P/N
Cuvette, Pyro Coated, 10/pk	4090-73	99-0059-00
Cuvette, Uncoated, 10/pk	4090-71	99-0059-01
Pre-inserted Platform Cuvette, Pyro Coated, 10/pk <i>With pre-inserted pyro platforms</i>	4090-75	n/a
Contact Set, 1 set	4090-010008	45-0006-00
Shroud, 1/pk	4090-010009	45-0004-00

ATI/Unicam® Type Graphite Products

Description	CPI P/N	Replaces ATI/Unicam® P/N
ELC™ Type Cuvette, Coated, 10/pk	4090-90	9423-393-95041
ELC™ Type Cuvette, Ridged, Coated, 20/pk	4090-010018	9423-393-90191
Pre-Inserted Platform Cuvette, Coated, 10/pk <i>Platform Tubes offer maximum sensitivity and are recommended for As, Pb, Se and Tl determinations.</i>	4090-96	9423-393-95191
Ridged, Coated Cuvette, 10/pk	4090-92	9423-393-95071
Ridged, Uncoated Cuvette, 10/pk	4090-94	9423-393-95031
Cuvettes, Uncoated, 10/pk	4090-010013	9423-393-90031
Cuvettes, Not Ridged, Coated, 10/pk	4090-010014	9423-393-95091
Cuvettes, Coated, 20/pk	4090-010020	9423-393-90091

Hitachi® Type Graphite Products

Description	CPI P/N	Replaces Hitachi® P/N
Platform Tubes, Pyro Coated, 10/pk	4090-55	ANO-0028
Platform Tubes, Pyro Coated, 50/pk	4090-56	ANO-0027
Cuvettes, Pyro Coated, 10/pk	4090-53	180-7444
Cuvettes, Pyro Coated, Type A 100µl, 10/pk	4090-58	190-6003
Cuvettes, Uncoated, 10/pk	4090-51	180-7400
Contact Rings, 1 set	4090-57	190-7115

Atomic Absorption



New CPI Pre-Inserted Forked Tubes and Platforms, P/N 4090-2324D (Shown here with the pre-inserted platform removed).

These tubes are shipped with pre-inserted platforms for your convenience.



Pyro coated tube with pre-inserted platform, for TJA®. CPI P/N 4090-40.



Hitachi and TJA Type Contacts and Tubes.

Value Pricing and Risk-Free Discount Programs

CPI tubes are priced lower than the OEM and other suppliers and offer the same or better performance. When compared with less expensive, lesser quality tubes, CPI tubes offer more value when inconsistent tube life, lower sensitivity, technician labor, and instrumentation downtime are considered. Because CPI tubes are designed to perform in accordance with OEM specifications, it is not necessary to reset your temperature programs, eliminating the need for time consuming optimization procedures.

Buy your next pack of Graphite Tubes from CPI and we'll Guarantee:

- Competitive Pricing
- Wide Choice of Tubes
- Fast Delivery
- Tube Performance
- Savings on Other CPI Products for Inorganics

Atomic Absorption

**Get A Free
1,000 ppm,
500ml AA
Standard With
Each Lamp
Ordered!**

**CPI's 2/year
5,000mA-hr
Warranty:**



We stand behind our lamps. All CPI Hollow Cathode Lamps are warranted to light and produce the rated intensity and spectral absorption for 2 years or 5,000mA-hrs* from the date of shipment, whichever comes first.

*Warranty period for lamps used with pulsed current or Smith-Hieftje background correction is lower. Consult data sheet accompanying lamp or contact your CPI Representative.

**Call for pricing on
Elements not listed.
Call for information on
quantity discounts or how
to include CPI Hollow
Cathode Lamps in an
Annual Savings Contract.**

Hollow Cathode Lamps



CPI offers a comprehensive selection of high quality, price-competitive hollow cathode lamps for popular spectrometer models. Our 1.5" (37mm) diameter element lamps are designed for direct use in Varian®, TJA®, GBC®, ATI®, Unicam®, Hitachi® Buck® and Shimadzu® spectrometers. We also offer specially designed lamps compatible with Smith-Hieftje® background correction, found on certain TJA® instrumentation, replacing Visimax® type II lamps. Coded lamps for Varian® and Unicam® are also available as well as a selection of multielement lamps.

1.5" (37mm) Diameter Type AA Lamps

Element	Lamps for Zeeman® and D2 Background Replaces Varian®, TJA Visimax I, GBC®, Hitachi®, Shimadzu, ATI®, Unicam® (non-coded) CPI P/N	Lamps for Smith-Hieftje® Background Correction Only Replaces TJA Visimax II CPI P/N	Varian® Type Coded Lamps CPI P/N	Varian® Type "Super Lamps" CPI P/N	Unicam® Type Coded Lamps CPI P/N
Aluminum (Al)	4081-101	4081-401	4081-301	-	4081-901
Antimony (Sb)	4081-102	4081-402	4081-302	4081-602	4081-902
Arsenic (As)	4081-103	4081-403	4081-303	4081-603	4081-903
Barium (Ba)	4081-104	4081-404	4081-304	-	4081-904
Beryllium (Be)	4081-105	4081-105	4081-305	-	4081-905
Bismuth (Bi)	4081-106	4081-406	4081-306	-	4081-906
Boron (B)	4081-107	4081-107	4081-307	-	4081-907
Cadmium (Cd)	4081-108	4081-408	4081-308	-	4081-908
Calcium (Ca)	4081-109	4081-409	4081-309	-	4081-909
Chromium (Cr)	4081-111	4081-411	4081-311	-	4081-911
Cobalt (Co)	4081-112	4081-412	4081-312	-	4081-912
Copper (Cu)	4081-113	4081-413	4081-313	-	4081-913
Gold (Au)	4081-120	4081-420	4081-320	-	4081-920
Iron (Fe)	4081-125	4081-425	4081-325	4081-625	4081-925
Lead (Pb)	4081-127	4081-427	4081-327	4081-627	4081-927
Lithium (Li)	4081-128	4081-128	4081-328	-	4081-928
Magnesium (Mg)	4081-130	4081-430	4081-330	-	4081-930
Manganese (Mn)	4081-131	4081-431	4081-331	4081-631	4081-931
Mercury (Hg)	4081-132	4081-132	4081-332	-	4081-932
Molybdenum (Mo)	4081-133	4081-133	4081-333	-	4081-933
Nickel (Ni)	4081-135	4081-435	4081-335	4081-635	4081-935
Platinum (Pt)	4081-139	4081-139	4081-339	-	4081-939
Potassium (K)	4081-140	4081-140	4081-340	-	4081-940
Selenium (Se)	4081-148	4081-448	4081-348	4081-648	4081-948
Silicon (Si)	4081-149	4081-449	4081-349	-	4081-949
Silver (Ag)	4081-150	4081-450	4081-350	-	4081-950
Sodium (Na)	4081-151	4081-151	4081-351	-	4081-951
Strontium (Sr)	4081-152	4081-452	4081-352	-	4081-952
Thallium (Tl)	4081-156	4081-156	4081-356	4081-656	4081-956
Tin (Sn)	4081-158	4081-458	4081-358	-	4081-958
Titanium (Ti)	4081-159	4081-459	4081-359	-	4081-959
Tungsten (W)	4081-160	4081-160	4081-360	-	4081-960
Vanadium (V)	4081-161	4081-461	4081-361	-	4081-961
Zinc (Zn)	4081-164	4081-464	4081-364	-	4081-964

1.5" Multielement AA Lamps

Elements	Non-Coded CPI P/N	Replaces Varian® P/N	Coded CPI P/N	Replaces Varian® P/N
Ca/Mg	4081-010016	56-101291-00		
Cu/Zn	4081-010034	56-101293-00	4081-010036	n/a
Na/K	4081-010015	56-101290-00	4081-010037	56-101070-00
Co/Cr/Cu/Fe/Mn/Ni	4081-010002	56-101292-00	4081-010017	56-101076-00

INDEX STANDARDS ICP GC TOX/AOX SPE COLITAG ORDERING

Hollow Cathode Lamps



CPI offers a comprehensive selection of high quality, price-competitive hollow cathode lamps for popular spectrometer models. Our 2" (50mm) diameter element lamps are designed for direct use in PerkinElmer® spectrometers. We also offer coded lamps for 5100, 4100, 2100, 1100 and other models as well as non-coded lamps with special plugs compatible for use in newer PerkinElmer® AAnalyst instrumentation. Adapters are not needed to run CPI lamps, but are offered to improve compatibility of lamps across a range of instrument models.

2" (50mm) Diameter Type AA Lamps

Element	PerkinElmer® Type Non Coded Lamps CPI P/N	PerkinElmer® Type Coded Lamps CPI P/N	PerkinElmer® Type Non Coded Lamps for AAnalyst® Systems CPI P/N
Aluminum (Al)	4081-201	4081-501	4081-801
Antimony (Sb)	4081-202	4081-502	4081-802
Arsenic (As)	4081-203	4081-503	4081-803
Barium (Ba)	4081-204	4081-504	4081-804
Beryllium (Be)	4081-205	4081-505	4081-805
Bismuth (Bi)	4081-206	4081-506	4081-806
Boron (B)	4081-207	4081-507	4081-807
Cadmium (Cd)	4081-208	4081-508	4081-808
Calcium (Ca)	4081-209	4081-509	4081-809
Chromium (Cr)	4081-211	4081-511	4081-811
Cobalt (Co)	4081-212	4081-512	4081-812
Copper (Cu)	4081-213	4081-513	4081-813
Gold (Au)	4081-220	4081-520	4081-820
Iron (Fe)	4081-225	4081-525	4081-825
Lead (Pb)	4081-227	4081-527	4081-827
Lithium (Li)	4081-228	4081-528	4081-828
Magnesium (Mg)	4081-230	4081-530	4081-830
Manganese (Mn)	4081-231	4081-531	4081-831
Mercury (Hg)	4081-232	4081-532	4081-832
Molybdenum (Mo)	4081-233	4081-533	4081-833
Nickel (Ni)	4081-235	4081-535	4081-835
Platinum (Pt)	4081-239	4081-539	4081-839
Potassium (K)	4081-240	4081-540	4081-840
Selenium (Se)	4081-248	4081-548	4081-848
Silicon (Si)	4081-249	4081-549	4081-849
Silver (Ag)	4081-250	4081-550	4081-850
Sodium (Na)	4081-251	4081-551	4081-851
Strontium (Sr)	4081-252	4081-552	4081-852
Thallium (Tl)	4081-256	4081-556	4081-856
Tin (Sn)	4081-258	4081-558	4081-858
Titanium (Ti)	4081-259	4081-559	4081-859
Tungsten (W)	4081-260	4081-560	4081-860
Vanadium (V)	4081-261	4081-561	4081-861
Zinc (Zn)	4081-264	4081-564	4081-864

2" PE®-Type Multielement AA Lamps

Elements	Non-Coded CPI P/N	Replaces PE® P/N	Coded CPI P/N	Replaces PE® P/N
Ca/Mg	4081-010024	0303-6092	4081-010022	N066-1285
Na/K	4081-010026	0303-6095	4081-010029	N066-1276
Al/Ca/Mg	4081-010028	0303-6099	4081-010030	N066-1228
Cu/Fe/Ni	4081-010027	0303-6101	4081-010031	N066-1266
Cu/Fe/Mn/Zn	4081-010025	0303-6105	4081-010032	N066-1219
Co/Cr/Cu/Fe/Mn/Ni	4081-010014	0303-6103	4081-010033	N066-1223

Lamp Plug Adapters

Noncoded Lamp Plug Adapter

Permits noncoded HCL's to run on PE® 5100 and 3300 instruments.

CPI P/N
4081-010021

Replaces PE®
N066-0122

Coded Lamp Plug Adapter

Permits coded HCL's to run on PE® instruments that do not support Coding.

CPI P/N
4081-010041

Replaces PE®
N066-0123

Noncoded Lamp Plug Adapter

Permits noncoded HCL's to run on PE® 4110 ZL, 4100ZL, 2100 and 1100B instruments.

CPI P/N
4081-010042

Replaces PE®
B015-6094

Noncoded Lamp Plug Adapter

Permits noncoded HCL's to run on PE AAnalyst® instruments.

CPI P/N
4081-010019

Replaces PE®
N305-0197

Universal Coded Lamp Plug Adapter

Permits Coded (non-Lumina) HCL's to run on PE AAnalyst instruments. Note: Adapter is for fit only; coding will not be read by AAnalyst® instrument.

CPI P/N
4081-010040

Replaces PE®
N305-0196

Atomic Absorption



New!
Count on CPI for
our non-coded HCL
Lamps for your Newer
AAnalyst® Systems



Atomic Absorption



Try our Pre-Mixed Pd & Mg(NO₃)₂ Modifier (CPI P/N 4095-29) and our Mg(NO₃)₂ Modifier specially prepared for use in PE® 4100 transverse furnaces (THGA) (CPI P/N 4095-31).

Matrix Modifiers
are available in
other volumes
– Call for sizes.

We guarantee
our AA Sample
Cups to be free of
metals background
contamination.

Matrix Modifiers & Sample Cups

Save time and improve analytical performance with CPI modifiers. Our pre-mixed matrix modifiers offer both convenience and consistency from analysis to analysis. To prevent analyte loss in the ashing process, use a matrix modifier to convert the analyte to a less volatile form.

Matrix Modifiers

Modifiers, Concentrated	Volume	CPI P/N	Replaces PE® P/N
1% Palladium	100mL	4095-10	B019-0635
1% Magnesium Nitrate	100mL	4095-12	B019-0634
1% Nickel	100mL	4095-14	n/a
1% NH ₄ H ₂ PO ₄	100mL	4095-16	N930-3445
5% Nickel Nitrate	100mL	4095-34	n/a
2% Calcium Nitrate	100mL	4095-35	n/a
5% Lanthanum Nitrate	100mL	4095-36	n/a
2% Ammonium Nitrate	100mL	4095-37	n/a
3000µg/mL Pd & 2000µg/mL Mg(NO ₃) ₂	250mL	4095-38	n/a
Modifiers, Pre-mixed (Per 20µL aliquots, for HGA® Furnaces)			
0.03mg Pd & 0.02mg Mg(NO ₃) ₂	250mL	4095-29	n/a
0.015mg Pd & 0.01mg Mg(NO ₃) ₂	250mL	4095-20	n/a
0.05mg Mg(NO ₃) ₂	250mL	4095-21	n/a
0.006mg Mg(NO ₃) ₂	250mL	4095-25	n/a
0.02mg Ni	250mL	4095-26	n/a
0.2mg NH ₄ H ₂ PO ₄ & 0.01mg Mg(NO ₃) ₂	250mL	4095-28	n/a
Modifiers, Pre-mixed (Per 5µL aliquots)			
0.015mg Pd & 0.02mg Mg(NO ₃) ₂	100mL	4095-40	n/a
0.2mg NH ₄ H ₂ PO ₄ & 0.01mg Mg(NO ₃) ₂	100mL	4095-41	n/a
Modifiers, Pre-mixed (Per 5µL aliquots, for THGA® Furnaces)			
0.005mg Pd & 0.003mg Mg(NO ₃) ₂	250mL	4095-30	n/a
0.015mg Mg(NO ₃) ₂	250mL	4095-31	n/a
0.05mg NH ₄ H ₂ PO ₄ & 0.003mg Mg(NO ₃) ₂	250mL	4095-32	n/a

AA Sample Cups

Description	CPI P/N	Replaces OEM P/N
1.5 - 2 ml Polystyrene Conical, 1000/pk	4092-300	PE® / B011-9079
1.5 - 2 ml Polystyrene Conical, 10,000/pk	4092-301	n/a
1.1 ml Cup for PE AS-71/72, 2,000/pk	4092-304	PE® / B051-0397
1.5 - 2 ml Polyethylene Conical, 1000/pk	4092-302	B008-7056 / 99-100282-00
1.5 - 2 ml Polyethylene Conical, 10,000/pk <i>Recommended for organic or acidic samples.</i>	4092-303	n/a
3 - 4 ml Polystyrene Conical Bottom, 1000/pk	4092-315	PE® / B012-9303
Sample Vessel, Polystyrene, for DS-2000, 1000/pk	4092-325	TJA® / 134703-00



1.1 mL sample cup for PE® AS-71/72, CPI P/N 4092-304.



Polystyrene cup for TJA® DS-2000, CPI P/N 4092-325



1.5 - 2 mL polystyrene sample cup for PE® and Varian®, CPI P/N 4092-300. Also available in polyethylene, CPI P/N 4092-302

Atomic Absorption Standards

CPI International AA Standards are provided in 1,000 µg/mL concentrations in 500 mL volumes. All our AA standards are produced in a controlled environment using high quality starting materials and the utmost care in handling. Each standard is verified instrumentally and gravimetrically and comes with a Certificate of Analysis and MSDS. All are guaranteed for 18-months from the date of shipping.

AA Single-Element Standards - 1,000µg/mL, 500mL

Element	Source/Matrix	CPI P/N	Element	Source/Matrix	CPI P/N
Al	Al Metal/HCl	4095-100012	Mn	Mn Metal/HNO ₃	4095-1000321
Sb	SbCl ₃ /HCl	4095-100022	Hg	Hg Metal/ HNO ₃	4095-1000331
As	As ₂ O ₃ /HCl	4095-100032	Mo	Mo Metal/HCl	4095-1000342
Ba	BaCl ₂ ·2H ₂ O/HCl	4095-100042	Ni	Ni(NO ₃) ₂ ·6H ₂ O/ HNO ₃	4095-1000361
Bi	Bi Metal/HNO ₃	4095-100061	K	KCl/HCl	4095-1000412
B	H ₃ BO ₃ /H ₂ O	4095-100074	Se	Se Metal/HNO ₃	4095-1000491
Cd	Cd Metal/HNO ₃	4095-100081	Si	(NH ₄) ₂ SiF ₆ /H ₂ O	4095-1000504F
Ca	Ca ₂ CO ₃ /HNO ₃	4095-100091	Ag	AgNO ₃ /HNO ₃	4095-1000511
Cs	Cs ₂ CO ₃ /HNO ₃	4095-1000111	Na	NaCl/HCl	4095-1000522
Cr	Cr Metal/HNO ₃	4095-1000121	Sr	SrCO ₃ /HNO ₃	4095-1000531
Co	Co Metal/HNO ₃	4095-1000131	Tl	TlNO ₃ /HNO ₃	4095-1000581
Cu	Cu Metal/HNO ₃	4095-1000141	Sn	Sn Metal/HCl	4095-1000612
Fe	FeCl ₃ /HCl	4095-1000262	Ti	Ti Metal/HCl	4095-1000622
La	La ₂ O ₃ / HNO ₃	4095-1000271	W	Na ₂ WO ₄ ·2H ₂ O/H ₂ O	4095-1000634
Pb	Pb(NO ₃) ₂ /HNO ₃	4095-1000281	V	V ₂ O ₅ /HCl	4095-1000652
Li	Li ₂ CO ₃ /HNO ₃	4095-1000291	Zn	Zn Metal/ HNO ₃	4095-1000681
Mg	Mg Metal/HNO ₃	4095-1000311	Zr	ZrO(NO ₃) ₂ ·2H ₂ O/HNO ₃	4095-1000691

AA Ionization Buffers & Releasing Agents

Ionization Buffers

Description	Source	Matrix	Volume	CPI P/N
1% Potassium	KCl	1% HCl	500 mL	4400-010132
5% Potassium	KCl	1% HCl	500 mL	4400-010133
1% Potassium	KNO ₃	1% HNO ₃	500 mL	4400-010134
5% Potassium	KNO ₃	1% HNO ₃	500 mL	4400-010135
1% Cesium	CsCl	1% HCl	500 mL	4400-010136
5% Cesium	CsCl	1% HCl	500 mL	4400-010137
1% Cesium	Cs ₂ CO ₃	1% HNO ₃	500 mL	4400-010138
5% Cesium	Cs ₂ CO ₃	1% HNO ₃	500 mL	4400-010139
1% Sodium	NaCl	1% HCl	500 mL	4400-010140
5% Sodium	NaCl	1% HCl	500 mL	4400-010141
1% Sodium	NaNO ₃	1% HNO ₃	500 mL	4400-010142
5% Sodium	NaNO ₃	1% HNO ₃	500 mL	4400-010143
1% Lithium	LiCl	1% HCl	500 mL	4400-010144
5% Lithium	LiCl	1% HCl	500 mL	4400-010145
1% Lithium	Li ₂ CO ₃	1% HNO ₃	500 mL	4400-010146
5% Lithium	Li ₂ CO ₃	1% HNO ₃	500 mL	4400-010147

Releasing Agents

Description	Source	Matrix	Volume	CPI P/N
1% Lanthanum	La ₂ O ₃	1% HCl	500 mL	4400-010152
1% Lanthanum	La ₂ O ₃	1% HNO ₃	500 mL	4400-010153
1% Strontium	SrCO ₃	2% HCl	500 mL	4400-010154
1% Strontium	SrCO ₃	2% HNO ₃	500 mL	4400-010155

Atomic Absorption

NEW!

Count on CPI to consolidate your AA Standards orders!

Ionization Buffers

CPI is proud to introduce its new line of Ionization Buffers. These solutions are used to suppress ionization interference in flame emission and flame absorption analysis. Call for a quote on custom Ionization Buffers.

OUR CERTIFIED REFERENCE MATERIALS OFFER YOU:

- NIST Traceable to SRM 3100 Series
- Certificate of Analysis and MSDS
- 18-Month Accuracy and Stability Guarantee
- 99.999% Certified Purity for Most Starting Materials
- Certified Accuracy to 0.3% on Single-Elements
- Stock Single and Multi-Element Blends Shipped Immediately.



And don't forget...

CPI ships Plasma Grade Custom Blends in just 7 days!

See the complete line of CPI International Peak Performance™ Standards beginning on page 75.

PEAK PERFORMANCE™
CERTIFIED REFERENCE MATERIALS

Inductively Coupled Plasma (ICP-OES & ICP-MS)



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ICP instruments that can rapidly measure lower levels of metals are finding their way into more and more labs. Because of the increasing popularity of ICP and ICP-MS, CPI International has increased our product line to meet the growing demand. Our products include a full line of high quality torches, spray chambers, nebulizers and other sample introduction supplies.

Inductively Coupled Plasma

CPI offers a wide-ranging selection of ICP-MS supplies to meet your varying instrument and analysis needs. All of our products for ICP-MS have been carefully selected to meet or exceed your analytical requirements ensuring maximum performance.

Our comprehensive list is growing as this exciting technology continues to progress. Check out our web site for the latest additions.



O-ring Free Sapphire Injectors for ICP and ICP-MS

Our sapphire injectors for ICP and ICP-MS are made from single-crystal sapphire tubes fitted into a PFA Teflon support. Sapphire injectors are ideal for the analysis of HF-containing samples, high-purity chemicals, and organic solvents. Adsorption, memory effects, and contamination problems found with molded alumina tubes are eliminated. These products achieve long lifetime due to the strength and chemical resistance of sapphire.

Agilent® 4500 and 7500

Torches and Bonnets

Description	CPI P/N	Agilent® P/N
Torch, 1.0mm Injector	4060-010453	
Torch, 1.5mm Injector, 7500	4060-010792	
Torch, 2.5mm Injector, 7500	4060-010454	
Torch, 2.5mm Injector, 4500	4060-010077	G1820-65028
Torch, Demountable HF Resistant, 4500	4060-010078	G1820-65035
Torch Shield	4060-010806	

Injectors, Supports and Adapters

Description	CPI P/N	Agilent® P/N
Injector, Alumina	4060-010079	
Injector Support, Teflon	4060-010080	G1820-65015
Ball and Socket Adapter, Quartz	4060-010196	G1820-80237

Spray Chambers

Description	CPI P/N	Agilent® P/N
Spray Chamber, Quartz, 90°	4060-010139	G1820-80443
Spray Chamber, 90°, Extended Inner Tube	4060-010165	G1820-80417
Spray Chamber, Cyclonic	4060-010200	N/A

Nebulizers

Description	CPI P/N	Agilent® P/N
Babbington V-Groove Nebulizer	4060-54	5063-5261
End Cap for Babbington	4060-691	5063-5262
High Solids Cross Flow for HP4500	4060-010390	G1820-65033
Nebulizer, Micro, 0.4ml/min, 35 PSI	4060-010158	
PFA MicroFlow Nebulizer, 100mL/min	4060-010192	

Cones

Description	CPI P/N	Agilent® P/N
Nickel Sampler (25mm Ni Insert)	4060-010032	G1820-65238
Nickel Skimmer	4060-010033	G1820-65265
Platinum Sampler (10mm Pt Insert)	4060-010034	G1820-65239
Platinum Sampler (18mm Pt Insert)	4060-010035	G1820-65360
Platinum Skimmer (7.2mm Pt Insert)	4060-010036	G1820-65237
Nickel Skimmer - 7500 Collision Cell	4060-010423	G1833-65497
Pt Ni Skimmer - 7500 Collision Cell	4060-010426	G1833-65092

Electron Multiplier

Description	CPI P/N	Agilent® P/N
Multiplier Assembly, complete, 4500	4200-010007	G1820-80386
Multiplier Assembly, complete, 7500	4200-010240	G1833-65420

Pump Tubing

Description	CPI P/N	Agilent® P/N
White-White, 0.040" Tygon Type, 12/pk	4062-440	G1820-65214
White-White, 0.040" Silicone, 6/pk	4062-240	G1820-65217
Yellow-Blue, 0.060" Mediprene, 6/pk	4062-019060	G1820-65216
Pump Tubing Kit for Internal Standard	4062-010015	G1820-65219
Orange-Red, 0.0075" Tygon Type, 12/pk For internal standard addition	4062-407	G1820-65520
Tygon type tubing, 0.060", 10ft	4062-018056	G1820-65104

PE® - SCIEX

Description	CPI P/N	PE® P/N	Elan® 9000 Series	Elan® 6000 Series	Elan® 5000 Series	Elan® 500 Series	Elan® 250 Series
Torches and Bonnets							
Torch, SHORT, ELAN	4060-010059					X	X
Torch, Long Form, 36.5mm*	4060-010057	N810-2001				X	X
Torch, ELAN, Demountable	4060-010058	N812-2006	X	X	X		
Bonnet, ELAN	4060-010060		X	X	X	X	X
* Standard Version							
Injectors							
Injector Tip, Quartz, 2.0mm	4060-010005	N069-5441			X	X	X
Quartz Injector Tip, 1.6mm, Type 1	4060-091	0047-3292	X	X	X	X	X
Quartz Injector Tip, 1.2mm	4060-092	N068-1631	X	X	X	X	X
Sample Injector Tip, Alumina, 1.5mm	4060-010180	N812-6040	X	X			
Sample Injector Tip, Alumina, 1.8mm	4060-010182	N/A	X	X			
Sample Injector Tip, Sapphire 2.0mm	4060-010184	N/A	X	X	X		
Spray Chambers							
Spray Chamber	4060-010186	N810-2031				X	X
Cyclonic Spray Chamber*	4060-010152	N812-0150	X	X	X		
Cyclonic Spray Chamber, Jacketed*	4060-010188	N/A	X	X	X		
*Requires Concentric Nebulizer							
Nebulizers							
PFA Microconcentric 20ul/min	4060-010191	N/A	X	X	X	X	X
PFA Microconcentric 50ul/min	4060-010190	N/A	X	X	X	X	X
PFA Microconcentric 100ul/min	4060-010192	N/A	X	X	X	X	X
PFA Microconcentric 400ul/min	4060-010194	N/A	X	X	X	X	X
PFA ST Microflow Nebulizer	4060-010193	N/A	X	X	X	X	X
PFA Sample Introduction Kits							
PFA High Purity Acid Resistant Upgrade Kit	4060-010540		X	X	X	X	X
PFA Semi-conductor Upgrade	4060-010577		X	X	X	X	X
PFA Organic Upgrade Kit	4060-010579		X	X	X	X	X
Cones							
Nickel Sampler	4060-010020	N810-2101				X	X
Nickel Skimmer	4060-010021	N810-2111				X	X
Nickel Sampler	4060-010022	WE01-3087			X		
Nickel Skimmer	4060-010023	N812-2000			X		
Nickel Sampler	4060-010028	WE02-1140	X	X			
Nickel Skimmer	4060-010029	WE02-1137	X	X			
Platinum Sampler	4060-010024	N810-2131				X	X
Platinum Skimmer	4060-010025	N810-2141				X	X
Platinum Sampler	4060-010026	WE10-3088			X		
Platinum Skimmer	4060-010027	N812-2035			X		
Platinum Sampler	4060-010030	WE01-4815	X	X			
Platinum Skimmer	4060-010031	WE01-4816	X	X			
Insertion Tool	4060-010085		X	X			
Electron Multipliers							
Multiplier Assembly	4200-010009	N810-1069			X	X	X
Multiplier Assembly	4200-010010	WE02-0328			5000A		
Multiplier Assembly	4200-010011	N810-5001	X	X			
Pump Tubing							
Black-Black, 0.030" PVC, 12/pk	4062-530	0990-8587	X	X	X	X	X
Red-Red, 0.045" PVC, 12/pk	4062-445	N068-0375	X	X	X	X	X
Black-Black, 0.030" Solvent Flex, 12/pk	4062-130A	0047-3550	X	X	X	X	X
Red-Red, 0.045" Solvent Flex, 12/pk	4062-145	N068-0376	X	X	X	X	X
Black-Black, 0.030" Silicone, 6/pk	4062-230	N0047-3552	X	X	X	X	X
Orange-Red, 0.0075" Tygon Type, 12/pk	4062-010005	N069-5476	X	X	X	X	X
Black-White, 0.125" Tygon Type, 12/pk	4062-4125	N812-2012	X	X			

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Coupled Plasma*

NEW!

**Convenience,
Corrosion Resistance,
Complete Control!**



Get it all in the ModBlock!
See page 18

**NEW! PC³
Peltier Cooled Cyclonic
Spray Chamber!**



This cooled inlet reduces oxide formation and improves sensitivity - See page 69 for more information.

**Ask about our
Internal Standard
Mixing Kit to replace
PE® part number
N069-0673;
CPI P/N 4062-019100**

**Inductively
Coupled Plasma**

**Increase ICP-MS
Sensitivity
More Than 10 Times!**



See more information on the Apex High Sensitivity Inlet System on page 72.



**For our complete
selection of CPI
Peak Performance™
Standards for ICP-MS,
see pages 74 to 91**

VG® Elemental

Torches and Bonnets

Description	CPI P/N	VG® P/N
Torch, 1.5mm	4060-010061	3201192
Torch, 2.0mm	4060-010062	3201732
Demountable Quartz Torch Body	4060-010204	1200080
Torch Body, Corrosion Resistant (CR)	4060-010206	3203095
Torch, 2.0mm	4060-010860	

Injectors

Description	CPI P/N	VG® P/N
Injector Tip, Alumina	4060-010064	1200079
Torch for Sapphire/Pt Injector	4060-010384	

Spray Chambers

Description	CPI P/N	VG® P/N
Spray Chamber, Concentric, Horizon	4060-010210	N/A
Spray Chamber, Water cooled, Quartz	4060-010212	3200841
Spray Chamber, Impact, Water Cooled	4060-010214	3204313
Quartz Torch Shield	4060-010216	3203789
Elbow Ball/Socket	4060-010218	N/A
Elbow Ball/Socket, Quartz	4060-010220	3200727

Nebulizers

Description	CPI P/N	VG® P/N
PFA Microconcentric 20ul/min	4060-010191	N/A
PFA Microconcentric 50ul/min	4060-010190	N/A
PFA Microconcentric 100ul/min	4060-010192	N/A
PFA Microconcentric 400ul/min	4060-010194	N/A
PFA ST MicroFlow Nebulizer	4060-010193	N/A

Cones

Description	CPI P/N	VG® P/N
Nickel Sampler	4060-010013	3004661
Nickel Mini-Skimmer	4060-010014	3004866
Nickel Micro-Skimmer, Enhanced Interface	4060-010015	3200860
Platinum Sampler (18mm insert)	4060-010016	3200262
Platinum Mini-Skimmer	4060-010109	N/A
Platinum Micro-Skimmer, Enhanced Interface	4060-010017	3201101
Platinum Plasmatrace Skimmer	4060-010018	3202005
Nickel Plasmatrace Skimmer	4060-010019	3200456
Platinum Plasmatrace 2 Micro Skimmer	4060-010110	3201941
Nickel Plasmatrace 2 Micro Skimmer	4060-010111	3201457
Nickel Skimmer, 0.4mm	4060-010121	3201585

Pump Tubing

Description	CPI P/N	VG® P/N
Black-Black, 0.030" PVC, 12/pk	4062-530	N/A
Red-Red, 0.045" PVC, 12/pk	4062-445Kit	N/A
Black-Black, 0.030" Solvent Flex, 12/pk	4062-130A	N/A
Red-Red, 0.045" Solvent Flex, 12/pk	4062-145Kit	N/A
Black-Black, 0.030" Silicone, 6/pk	4062-230	N/A
Orange-Red, 0.0075" Tygon Type, 12/pk	4062-407	N/A
Black-White, 0.125" Tygon Type, 12/pk	4062-0125	N/A

Varian® Ultramass®

*Inductively
Coupled Plasma*

Torches and Bonnets

Description	CPI P/N	Varian® P/N
Torch, ICP-MS	4060-010068	20-100783-00
Torch Body, HF Demountable, ICP-MS	4060-010222	20-100793-90

Injectors and Holders

Description	CPI P/N	Varian® P/N
Sample Injector Tip, Quartz, 1.8mm 3/pk	4060-010144	99-100570-00
Sample Injectors, Quartz 0.8mm 3/pk	4060-010145	99-100775-00
Sample Injector Tip, Alumina, 1.8mm	4060-010071	99-100675-90
Injector Tube Holder, Teflon®	4060-010072	99-100573-00

Spray Chambers

Description	CPI P/N	Varian® P/N
Cyclonic Spray Chamber	4060-010156	20-100817-00

Nebulizers

Description	CPI P/N	Varian® P/N
PFA Micro-concentric 50µl/min	4060-010190	
PFA Micro-concentric 100µl/min	4060-010192	
PFA Micro-concentric 400µl/min	4060-010194	
Twin Bore Nebulizer, 30 psi, 3ml/min	4060-010588	20-100765-00/20-100816-00
See Page 66 for our complete line of nebulizers		

Cones

Description	CPI P/N	Varian® P/N
Nickel Sampler, (Copper Base w/1.5" Ni Insert)	4060-010105	99-100698-00
Nickel Skimmer	4060-010106	99-100699-00
Platinum Sampler (18mm Pt Insert)	4060-010107	99-100700-00
Platinum Skimmer (7.2mm Pt Insert)	4060-010108	99-100701-00
High Performance Sampler Cones, Ni	4060-010169	99-100940-00
High Performance Skimmer Cones, Ni	4060-010170	99-100941-00

Electron Multipliers

Description	CPI P/N	Varian® P/N
Multiplier Assembly	4200-010013	79-100181-00

Pump Tubing

Description	CPI P/N	Varian® P/N
Black-Black, 0.32 ml/min PVC, 12/pk	4062-430	37-100272-00
White-White, 0.60 ml/min PVC, 12/pk	4062-440	37-100344-00
Gray-Gray, 1.00 ml/min PVC, 12/pk	4062-451	37-100345-00
Blue-Blue, 1.60 ml/min PVC, 12/pk	4062-465	37-100346-00
Purple-Purple, 2.50 ml/min PVC, 12/pk	4062-481	37-100273-00

Please see page 70 for our complete line of pump tubing

See our complete
selection of pump
tubing on page 70



Inductively Coupled Plasma



O-ring Free Sapphire Injectors for ICP and ICP-MS

Our sapphire injectors for ICP and ICP-MS are made from single-crystal sapphire tubes fitted into a PFA Teflon support. Sapphire injectors are ideal for the analysis of HF-containing samples, high-purity chemicals, and organic solvents. Adsorption, memory effects, and contamination problems found with molded alumina tubes are eliminated. These products achieve long lifetime due to the strength and chemical resistance of sapphire.

See our complete line
of PFA Teflon Nebulizers
and Spray Chambers on
page 68.

Finnigan® ICP-MS

Torches and Bonnets

Description	CPI P/N	Finnigan® P/N
Torch Standard, 1 piece	4060-010073	
Torch Demountable	4060-010074	
Torch, Fixed Element	4060-010075	

Injectors, Holders and Elbows

Description	CPI P/N	Finnigan® P/N
Injector, Quartz	4060-010076	
Elbow Ball/Socket Borosilicate	4060-010226	
Elbow Ball/Socket, Quartz	4060-010332	

Spray Chambers

Description	CPI P/N	Finnigan® P/N
Spray Chamber, Water Cooled, Borosilicate	4060-010228	
Spray Chamber, Water Cooled, Quartz	4060-010230	
Spray Chamber Element, Water Cooled	4060-010232	
Spray Chamber, Element, Water Cooled, Quartz	060-010234	

Nebulizers

Description	CPI P/N	Finnigan® P/N
PFA Microconcentric 20ul/min	4060-010191	N/A
PFA Microconcentric 50ul/min	4060-010190	N/A
PFA Microconcentric 100ul/min	4060-010192	N/A
PFA Microconcentric 400ul/min	4060-010194	N/A
PFA ST MicroFlow Nebulizer	4060-010193	N/A

Cones

Description	CPI P/N	Finnigan® P/N
Nickel Sampler, (Copper Base w/1.5" Ni Insert)	4060-010100	TS067014
Nickel Skimmer	4060-010101	FS067021
Nickel Accelerator	4060-010102	FS067019
Platinum Sampler (18mm Pt Insert)	4060-010103	TS067004
Platinum Skimmer (7.2mm Pt Insert)	4060-010104	TS067016
Platinum Skimmer (N) (6.35) - TS067016	4060-010086	1067510
Nickel Skimmer (N) - TS067015	4060-010087	1044540
Skimmer Fitting Tool - FS067017B	4060-010088	1044850
Aluminum Sample Cone	4060-010089	1044530-AI
Aluminum Sample Cone (H)	4060-010090	1067600-AI

Electron Multipliers

Description	CPI P/N	Finnigan® P/N
Multiplier Assembly, for Element I	4200-010242	
Multiplier Assembly, for Element II	4200-010243	

Pump Tubing

Description	CPI P/N	Finnigan® P/N
Black-Black, 0.030" PVC, 12/pk	4062-530	N/A
Red-Red, 0.045" PVC, 12/pk	4062-445Kit	N/A
Black-Black, 0.030" Solvent Flex, 12/pk	4062-130A	N/A
Red-Red, 0.045" Solvent Flex, 12/pk	4062-145Kit	N/A
Black-Black, 0.030" Silicone, 6/pk	4062-230	N/A
Orange-Red, 0.0075" Tygon Type, 12/pk	4062-010005	N/A
Black-White, 0.125" Tygon Type, 12/pk	4062-4125	N/A

ICP-MS Standards

ICP-MS Calibration Standard			
CPI P/N		Volume	
4400-ICP-MSCS		250mL	
µg/mL in 5% HNO ₃ + tr HF			
Al	10	Mn	10
As	10	Mo	10
Ag	10	Na	10
Ba	10	Ni	10
Be	10	Pb	10
B	10	Sb	10
Ca	10	Sc	10
Co	10	Se	10
Cd	10	Sr	10
Cr	10	Th	10
Cu	10	Tl	10
Eu	10	U	10
Ho	10	V	10
La	10	Yb	10
Li	10	Zn	10
Mg	10		

ICP-MS Interference Check Solutions					
CPI P/N		Volume			
4400-ICP-MS-ICS		100mL			
µg/mL in 2% HNO ₃ + tr HF					
Solution A			Solution B		
Al	500.0	Ag	0.10	Mg	500.00
C	1000.0	Al	500.00	Mo	10.00
Ca	500.0	As	0.10	Mn	0.10
Cl	3600.0	C	1000.00	Na	500.00
Fe	500.0	Ca	500.00	Ni	0.20
K	500.0	Cd	0.05	P	500.00
Mg	500.0	Cl	3600.00	Se	0.10
Mo	10.0	Co	0.20	S	500.00
Na	500.0	Cr	0.10	Ti	10.00
P	500.0	Cu	0.10	V	0.20
S	500.0	Fe	500.00	Zn	0.10
Ti	10.0	K	500.00		

Calibration Standard			
CPI P/N		Volume	
4400-ICPMS-250		250mL	
µg/mL in 2% HNO ₃ + tr HF			
Be	10	Pb	10
Bi	10	Mg	10
Ce	10	Ni	10
Co	10	U	10
In	10		

Standard I			
CPI P/N		Volume	
4400-ICPMS1		250mL	
µg/mL in 5% HNO ₃			
Ce	10	Pr	10
Dy	10	Sm	10
Er	10	Sc	10
Eu	10	Tb	10
Gd	10	Th	10
Ho	10	Tm	10
La	10	Yb	10
Lu	10	Y	10
Nd	10		

Standard III			
CPI P/N		Volume	
4400-ICPMS3		250mL	
µg/mL in 10% HCl			
Au	10	Rh	10
Hf	10	Ru	10
Ir	10	Sb	10
Pd	10	Sn	10
Pt	10	Te	10

Standard IV			
CPI P/N		Volume	
4400-010027		250mL	
µg/mL in 5% HNO ₃ + tr HF			
B	10	S	10
Ge	10	Si	10
Mo	10	Ta	10
Nb	10	Ti	10
P	10	W	10
Re	10	Zr	10

Internal Standard			
CPI P/N		Volume	
4400-010034		100mL	
µg/mL in 1% HNO ₃			
⁶ Li	100	⁸⁹ Y	100
⁴⁵ Sc	100	¹¹⁵ In	100
¹⁵⁹ Tb	100	²⁰⁹ Bi	100

Tuning Solution for HP 4500®			
CPI P/N		Volume	
4400-010035		100mL	
µg/mL in 5% HNO ₃			
Ce	10	Tl	10
Li	10	Y	10

Inductively Coupled Plasma



For our complete selection of CPI Peak Performance™ Standards for ICP-MS, see pages 74 to 91

NEW!

**Convenience,
Corrosion Resistance,
Complete Control!**



Get it all in the ModBlock!
See page 18

Inductively Coupled Plasma



Multiplier for PE-SCIEX 6000,
CPI P/N 4200-010011



Multiplier for HP/Agilent 4500 ICP-MS,
CPI P/N 4200-010007



Multiplier for VG PQ2/2+
with SXP 300 Rods,
CPI P/N 4200-010015



Noble RF Load Coil

ICP-MS Electron Multipliers

CPI offers electron multipliers for PE/Sciex®, VG® Elemental, Hewlett-Packard®, Varian® and TJA® ICP-MS systems. These products are direct replacements for the OEM installed multiplier and are guaranteed to meet your expectations for performance. Count on CPI to serve all your electron multiplier needs.

Description	CPI P/N	Replaces OEM p/n
PerkinElmer®/Sciex® Type Multipliers		
Multiplier Assembly, ELAN® 250/500/5000	4200-010009	N810-1069
Multiplier Assembly, ELAN® 5000A	4200-010010	WE02-0328
Multiplier Assembly, ELAN® 6000	4200-010011	N812-5001
VG Elemental® Type Multipliers		
Multiplier, VG PQ2, PQ2+ (12-12 Rods)	4200-010014	
Multiplier, VG PQ2, PQ2+ (SXP Rods)	4200-010015	2027814
Multiplier, VG Genesis	4200-010016	2201718
Multiplier, VG PQ3 (Dual Mode)	4200-010017	2027814
Multiplier, VG PQ3 (Single Mode)	4200-010015	2027814
HP/Agilent® Type Multipliers		
Multiplier Assembly, 4500	4200-010007	G1820-80386
Multiplier Assembly, 7500	4200-010240	G1833-65420
Varian® Type Multipliers		
Multiplier Assembly, Ultramass®	4200-010013	79-100181-00
TJA® Type Multipliers		
Multiplier Assembly, POEMS®	4200-010012	135784-01

RF Coils

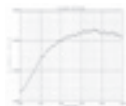
The Gold-Standard for ICP-MS

Introducing the Noble Coil - a new product with Patent Pending design features to create a barrier to prevent copper atom migration.

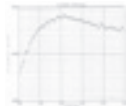
Today's ICP-MS applications are demanding on instrumentation. The Noble Coil will eliminate virtually all oxidation and scaling. Its unique design provides for optimum RF coupling efficiency for the life of the coil. The Au metal surface decreases the possibility of arcing - a major cause of torch and coil destruction.

This patented design results in longer life when compared to standard copper coils.

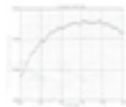
The representations below are RF power optimization plots of three RF coils on a PE Elan® 6000.



Maximum intensity 337,000 cts



Maximum intensity 281,000 cts (note misshapen curve)



Maximum intensity 358,000 cts

The instrument was fully optimized prior to this test. The test solution is 10ppb Rh in 1% nitric. Only the coils were changed between tests.



New Copper Coil



Four Month Old Copper Coil



Four Month Old Noble Coil

RF Coils

Noble Coil for PE Elan 9000/6X00/DRC	4060-010880
Standard Copper Coil for PE Elan 9000/6X00/DRC	4060-010881
Noble Coil for PE 5000	4060-010882
Standard Copper Coil for PE 5000	4060-010883

Cones For ICP-MS

CPI Skimmer and Sampler cones for popular ICP-MS instrumentation are the choice of leading instrument OEM's, and are guaranteed to meet or exceed your expectations. These highly precise components are produced using a proprietary combination of electroforming and CNC matching techniques. This allows the ability to produce the sharpest hole edges, highest surface finishes and perfectly tapered holes, all of which help minimize gas disturbances and cooling technology to conduct heat away from the tip. This prevents melting or burning due to the low thermal conductivity of nickel, and thus greatly expanding peak sensitivity and cone lifetime. You will be impressed with the quality and performance of these industry-leading products.

*Inductively
Coupled Plasma*



Cones For ICP-MS		
Description	CPI P/N	Replaces OEM P/N
VG® Elemental Type Cones		
Nickel Sampler - with Fixing Holes	4060-010093	3004661
Nickel Miniskimmer	4060-010014	3004866
Nickel Micro-Skimmer (N), Enhanced Interface	4060-010015	3200860
Nickel Skimmer, 0.4 Hole - Eclipse	4060-010121	3201585
Platinum Sampler (10mm insert)	4060-010016	3200262
Platinum Microskimmer (7.2mm insert)	4060-010017	3201101
Nickel Plasmatrace Skimmer	4060-010019	3200456
Platinum Skimmer PT2 (7.2mm insert)	4060-010749	3201941
Nickel Sampler (HP) "supercone" AXIOM	4060-010091	1600485
Platinum Sampler (HP) "supercone" AXIOM	4060-010092	1600335
PerkinElmer - SCIEX Type Cones		
Nickel Sampler-250/500	4060-010020	N810-2101
Nickel Skimmer-250/500	4060-010021	N810-2111
Nickel Sampler-5000	4060-010022	WE01-3087
Nickel Skimmer-5000	4060-010023	N812-2000
Platinum Sampler-250/500	4060-010024	N810-2131
Platinum Skimmer-250/500	4060-010025	N810-2141
Platinum Sampler-5000 (10mm insert)	4060-010026	WE10-3008
Platinum Skimmer-5000 (10mm insert)	4060-010027	N812-2035
Nickel Sampler-6000	4060-010028	WE02-1140
Nickel Skimmer-6000	4060-010029	WE02-1137
Platinum Sampler-6000 (10mm insert)	4060-010030	WE01-4815
Platinum Skimmer-6000 (7.2mm insert)	4060-010031	WE01-4816
6000 Cone Insertion Tool	4060-010085	WE01-7142
Hewlett Packard / Yokagawa / Agilent Type Cones		
Nickel Sampler (25mm Ni insert in Cu)	4060-010032	G1820-65238
Nickel Skimmer	4060-010033	G1820-65265
Platinum Sampler (10mm Pt insert)	4060-010034	G1820-65239
Platinum Skimmer (7.2mm Pt insert)	4060-010036	G1820-65237
Nickel Skimmer - HP7500 Collision cell	4060-010423	G1833-65497
Pt Ni Skimmer - HP7500 Collision cell	4060-010426	G1833-65092
Finnigan Type Cones		
Nickel Sampler - TS067014	4060-010100	1044530
Nickel Skimmer (H) - FS067021 -01141A	4060-010101	1067600
Nickel Accelerator - FS067019	4060-010102	067019A
Platinum Sampler (6.35) - TS067004	4060-010103	1067500
Platinum Skimmer (H) (6.35mm insert)	4060-010104	1047460
Platinum Skimmer (N) (6.35) - TS067016	4060-010086	1067510
Nickel Skimmer (N) - TS067015	4060-010087	1044540
Skimmer Fitting Tool - FS067017B	4060-010088	1044850
Aluminum Sample Cone	4060-010089	1044530-AI
Aluminum Sample Cone (H)	4060-010090	1067600-AI
Varian Type Cones		
Nickel Skimmer	4060-010106	99-100698-00



Inductively Coupled Plasma

Count on CPI

CPI supplies a full range of ICP glassware designed for all popular makes and models of ICP Spectrometers including Thermo Jarrell Ash®, PerkinElmer®, Leeman®, Spectro®, Varian®, ISA/Jobin Yvon®, Thermo ARL®, and Thermo Baird®. These parts are engineered for reliable performance and durability and made to exacting specifications. All CPI brand torches, spray chambers and nebulizers are guaranteed to be compatible with your instrumentation.



Ceramic Base Radial Torch for TJA ICP Spectrometers, CPI P/N 4060-36.



Cross Flow Nebulizer for TJA ICP's CPI P/N 4060-38. The platinum sample introduction stem is recessed to prevent breakage.



High Solids Teflon® Nebulizer for TraceScan®, CPI P/N 4060-694.

TJA®

Torches and Injectors

Description	CPI P/N	TJA® P/N	2000 2200, 2400	975, 9000, 61, 1100	61E PolyScan® AtomScan® 16, 25, Advantage® Radial Iris, POEMS	Trace® Advantage® Axial TraceScan®, Iris AP®
Torch, for ICP 2000-2400	4060-31	190400-73	x			
Torch and Removable Tip, Standard	4060-30	190400-54		x		
Torch and Tip (4060-30), and one spare tip	4060-30TT	N/A		x		
Ceramic Base Torch & Tip, High Flow/Low Flow	4060-36	126432-02			x	
Ceramic Base Torch & Tip, High Flow	4060-35	126432-01			x	
Ceramic Base Torch & Tip, High Flow Organics/Oils	4060-37	125124-01			x	
Ceramic Base Torch & Tip, Dual View	4060-010133					
Injector Tip, Aqueous	4060-35T	125407-00			x	x
Injector Tip, Organics/Oils	4060-36T	125407-01			x	x
Injector Tip, 2.0	4060-010048	136502-01			x	x
Injector Tip, 2.4	4060-010049	136502-02			x	x
Torch, Axial, with tip	4060-39	126440-03/126432-03				x
Injector Tube, Alumina, 1.5mm	4060-010160	136436-01			x	x
Injector Tube, Sapphire 1.8mm	4060-010322	N/A			x	x

Accessories

Description	CPI P/N	TJA® P/N	2000 2200, 2400	975, 9000, 61, 1100	61E PolyScan® AtomScan® 16, 25, Advantage® Radial Iris, POEMS	Trace® Advantage® Axial TraceScan®, Iris AP®
Torch Bonnet	4060-07	190400-75	x	x		
Torch Extension	4060-010284			x		
Torch Extension with Optical Port	4060-010286			x		
Anti Arc Cap, flat edge	4060-40	085207-01			x	
Anti-Arc Cap	4060-41	085207-00			x	
Center Tube O'Ring	4060-010161	125847-00			x	x

Spray Chambers & Accessories

Description	CPI P/N	TJA® P/N	2000 2200, 2400	975, 9000, 61, 1100	61E PolyScan® AtomScan® 16, 25, Advantage® Radial Iris, POEMS	Trace® Advantage® Axial TraceScan®, Iris AP®
Spray Chamber, for ICP 2000-2400	4060-32	127947-00	x			
Aerosol Baffle	4060-94	003952-00	x	x	x	
Cyclonic Spray Chamber	4060-010288	N/A	x	x		
Spray Chamber, HF Resistant, Teflon	4060-010008	N/A	x	x	x	x
Spray Chamber, Standard	4060-90	190400-65		x		
Spray Chamber, Curved Drain	4060-010290			x		
Spray Chamber, Open Ends	4060-92	130089-00			x	
Spray Chamber, Water Cooled, Open Ends	4060-010292				x	
Cyclonic Spray Chamber, 61E	4060-511	136120-00			x	
Cyclonic Spray Chamber, for TraceScan	4060-51	134620-00				x
Cyclonic Spray Chamber, two-part design	4060-52	134200-00				x
O'Ring for Spray Chamber, Iris (4060-511)	4060-010142	134556-00				x

TJA® (con't)

Nebulizers

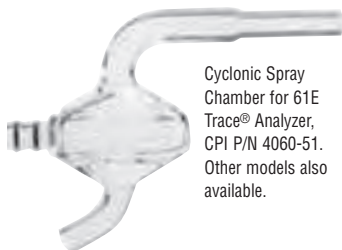
Description	CPI P/N	TJA® P/N	2000		61E PolyScan® AtomScan® 16, 25, Advantage® Radial Iris, POEIMS	Trace® Advantage® Axial TraceScan®, Iris AP®
			2200, 2400	975, 9000, 61, 1100		
Cross Flow Nebulizer	4060-38	126989-00	x	x	x	
O-Ring for Cross Flow Nebulizer	4060-381	133202-50	x	x	x	
Argon Inlet Fitting for CPI Cross Flow Nebulizer, 1/pk	4060-382	N/A	x	x	x	
High Solids Teflon Nebulizer and fittings	4060-694	136388-00			x	x
Nebulizer, 30psi, 0.7 L/min Ar, 2ml/min w/ fitting	4060-010592	134365-00			x	x
PFA Microconcentric Nebulizer 50ul/min	4060-010190				x	x
PFA Microconcentric Nebulizer 100ul/min	4060-010192				x	x
PFA Microconcentric Nebulizer 400ul/min	4060-010194				x	x
Babbington, V-Groove Nebulizer, Peek	4060-54				x	x

General Tubing

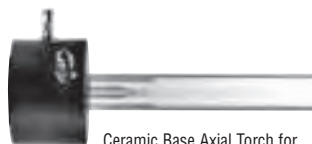
Description	CPI P/N	Application/OEM P/N
Teflon® Tubing, 3/16 id x 5/16 od (Specify custom length)	4061-01	miscellaneous
Teflon® Tubing, .026 id x .050 od (Specify custom length)	4097-302	TJA® / 133006-00 / 042982-00
Teflon® Tubing, .020 id, for TJA® Sipping Probe, 1 ft	4097-308	See CPI P/N 4097-30
Teflon® Tubing, .031 id, for TJA® Sipping Probe, 1 ft	4097-309	See CPI P/N 4097-30
Teflon® Tubing, .063 id x .125 od (Specify custom length)	4097-322	TJA® / 043437-00
Teflon® Tubing, .6mm id, 10 ft	4060-38TT	TJA® / 311390-14

TJA® ICP Autosampler Supplies

Description	CPI P/N	TJA® P/N
Sipping Probe, for ISC-75, TJA-150, AS-300, 2/pk	4097-30	042982-00/133006-00
Injector Tip, FASTAC II, Autosampler, 5/pk	4060-110	043719-00
Ultem Tubing Probes, 50/pk	4060-010173	132971-50
Sample Tube, Polypropylene, 16-17mm x 100mm, 1000/pk	4092-320	n/a
Sample Tube, Polypropylene, 13mm x 100mm, 1000/pk	4092-327	n/a
Sample Tube, Polystyrene, 13mm x 100mm, 1000/pk	4092-324	n/a
Sample Tube, Polypropylene, 12mm x 75mm, 1000/pk	4092-330	n/a
Sample Tube, Polystyrene, 17mm x 100mm, 1000/pk	4092-010001	n/a



Cyclonic Spray Chamber for 61E Trace® Analyzer, CPI P/N 4060-51. Other models also available.



Ceramic Base Axial Torch for TraceScan® Analyzer, CPI P/N 4060-39.



Get it all in the ModBlock!
See page 18

Inductively Coupled Plasma

Try our Internal Standard Mixing Kit for TJA Tracescan® instrumentation, CPI P/N 4062-910. This product allows for the simultaneous introduction of sample and internal standard.

New!

Try our Ozone-Free Mercury Lamp to replace TJA part number 126345-00
CPI P/N 4060-010140

NEW!

Convenience, Corrosion Resistance, Complete Control!

**Inductively
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Mini Spray Chamber for ARL®,
CPI P/N 4060-72.



Mini Torch for
ARL®, CPI P/N
4060-71.

ARL®

Torches and Injectors

Description	CPI P/N	ARL® Thermo P/N
Torch, Maxi	4060-70	139009-0003
Standard Torch, 20mm	4060-010236	
ICPQ Torch	4060-010238	137000-0000
Torch, Nitrogen	4060-010240	173127-0000
Torch Body, HF/C	4060-010043	173131-0000
Injector Tip, Alumina	4060-010064	1200079
Torch, Mini	4060-71	173463-0000
Torch Body, Mini, HF/CR	4060-010041	173473-0000
Torch, Nitrogen, Mini	4060-010242	170692-0000
Torch, Fisons/ARL Maxim 1 & 3	4060-701	S111403
Torch, Maxim, HF/CR	4060-010244	S213787
Torch Extension	4060-010246	

Accessories

Description	CPI P/N	ARL® Thermo P/N
Torch Extension with Optical Port	4060-010248	
Torch Bonnet	4060-010250	
Torch Bonnet, Induction Coil M/S	4060-010252	173251-0000
Argon Snout Tube	4060-010254	170631-0000
Teflon Insert for HF Torch	4060-010256	
Teflon Insert, Adjustable	4060-010258	
Teflon Coated O-rings for Torch 5/pk	4060-711	
Torch Bonnet, Mini	4060-010260	173252-0000
Argon Snout Tube, Mini	4060-010262	170693

Spray Chambers

Description	CPI P/N	ARL® Thermo P/N
Spray Chamber	4060-75	173142-0000
Spray Chamber, MDSN	4060-78	173142-0001
Teflon Insert for MDSN Chamber	4060-010264	
Spray Chamber with Impact Bead	4060-010266	139008-0000
Spray Chamber, Open End	4060-010268	
Cyclonic Spray Chamber, 12/5, 10mm	4060-010042	N/A
Spray Chamber, HF Resistant, Teflon	4060-010008	
Spray Chamber, Mini	4060-72	173142-0002
Spray Chamber, Mini, MDSN	4060-010270	173142-0003
Spray Chamber, Mini, Cooled	4060-76	173142-0004
Spray Chamber, Maxim, Cooled	4060-010272	S702174
Spray Chamber, Fisons/ARL Maxim 1&3 /I2000	4060-751	S702171
Drain Trap, Fisons/ARL Maxim 1&3 /I2000	4060-752	S702232
Teflon Coated O-rings for Chamber	4060-010274	
Spray Chamber	4060-25	3200841

Nebulizers

Description	CPI P/N	ARL® Thermo P/N
Glass Nebulizer 30psi, 1.0 L/Min Ar, 3ml/min	4060-010588	
Glass Nebulizer 35psi, 0.7 L/Min Ar, 2ml/min	4060-010276	

Torches and Injectors

Description	CPI P/N	Leeman® P/N	Precision P/N
Torch, with Ball Joint, Aqueous	4060-12	120-3748	550-20
Torch, with Ball Joint, Oils	4060-14	120-3749	550-22
Torch, Demountable	4060-88	318-0001	550-43
Quartz Injection Tube	4060-89	318-0004	550-45
Torch, Square End	4060-10	N/A	550-10
Torch, Beveled End (45 degree angle)	4060-11	318-0016	550-05
Torch, Direct Injection Nebulizer	4060-86	N/A	
Torch, Demountable, with Injector Tube	4060-84	120-3010	
Torch, Axial (PS Series), with Ball Joint	4060-121	120-00200-1	550-50
Torch, Aqueous, Tandem	4060-13	318-00026	550-30
Torch, Aqueous, Tandem Axial	4060-13A	318-00027	550-32
Torch, Aqueous, Dual View, DRE	4060-010146	318-00065	550-65
Torch, Aqueous, Axial, DRE	4060-010164	318-00064	550-64
Torch, Demountable, Axial, Aqueous/Organics	4060-010151	318-00063	550-69

Spray Chambers & Accessories

Description	CPI P/N	Leeman® P/N	Precision P/N
Spray Chamber, with Drain	4060-87	120-3751	50-25
Cyclonic Spray Chamber, Axial	4060-010155	N/A	OEM
Spray Chamber, Axial	4060-010167	310-00049	550-55

Nebulizers

Description	CPI P/N	Leeman® P/N	Precision P/N
Teflon Parallel Path, Long Nose	4060-694	N/A	

Pump Tubing

Description	CPI P/N	Leeman® P/N	Precision P/N
Orange, 0.020", PVC, 12/pk	4062-920	309-3551	
Black, 0.030", PVC, 12/pk	4062-930	309-3552	
Red, 0.045", PVC, 12/pk	4062-945	309-3538	
Disposable Uptake Line, for PS1000/2000/3000, 1/pk	4062-905	120-00168	

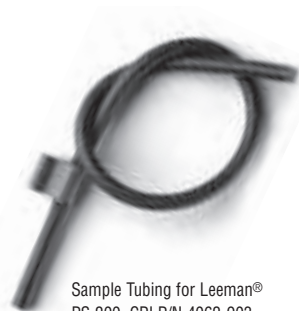
Inductively Coupled Plasma



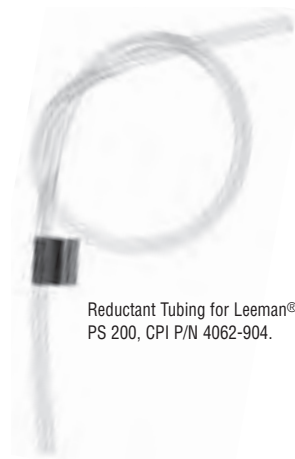
Torch with ball joint for aqueous samples (CPI P/N 4060-12) and Quartz Injector Tube for Demountable Torch (CPI P/N 4060-89).

CPI Performance Point

Did you know that the temperature of the plasma can reach 8000k?



Sample Tubing for Leeman® PS 200, CPI P/N 4062-903. Also available in PVC P/N 4062-010004



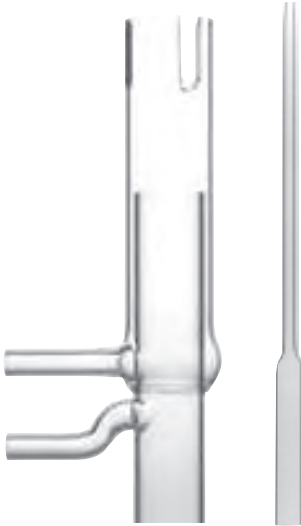
Reductant Tubing for Leeman® PS 200, CPI P/N 4062-904.



Disposable Sample Uptake Line for Leeman® PS 1000 / 2000 / 3000 ICP. CPI P/N 4062-905, 1/pk.

ORDERING COLTAG AXIAL SPE TOX/AX GC SPE AAS ICP STANDARDS IN

**Inductively
Coupled Plasma**



Torch Body with slots, Type II (CPI P/N 4060-04) and Quartz Injector Tip (CPI P/N 4060-09).

See page 62 for
PE® OPTIMA®
type supplies.



Spray Chamber for PerkinElmer®, CPI P/N 4060-81.

PE® ICP

Torches

Description	CPI P/N	PE® P/N	Plasma®		ICP				
			1000, 2000	Plasma® II	Plasma® 40 & 400	5000 6000	ICP 5500	ICP 5500B	ICP 6500
Torch Body, Slots and Side Arms Type II	4060-04	N058-0528	x	x	x				x
Torch Body Type I, Demountable with Slots	4060-06	N058-0376		x	Plasma 40 Only				
Torch Body with Side Arms, Wear Metals Type II	4060-02	N068-1690			x				
Torch, One Piece with Ball Joint	4060-01	0047-2048				x	x	x	x
Torch Body, Demountable Type I	4060-05	N058-0233							x
Torch, No Slots, PE400	4060-010125	N/A			x				
Quartz Injector Tip, 1.2mm	4060-092	N068-1631	x	x	x				x
Quartz Injector Tip, 1.6mm	4060-091	0047-3292	x	x	x				x
Quartz Injector Tip, 1.2mm, Type I	4060-010356			x					x
Quartz Injector Tip, 1.6mm, Type I	4060-010358	N058-0449		x					x
Alumina Injector, 2.0mm Type II, OPTIMA 3000	4060-010172	N058-2184	x	x	x				x
Alumina Injector, 1.5mm Type II, OPTIMA 3000	4060-010163	N058-2185	x	x	x				x

Injectors

Description	CPI P/N	PE® P/N	Plasma®		ICP				
			1000, 2000	Plasma® II	Plasma® 40 & 400	5000 6000	ICP 5500	ICP 5500B	ICP 6500
Injector/Torch Support Adapter with O'rings	4060-010113	N058-2248	x	x	x				x
Quartz Bonnets	4060-08	N058-2235	x	x					
Purge Extension Window	4060-085	N058-1497	x	x					
Purge Extension	4060-010114	N068-1234			x				
Torch Extension	4060-010360	0047-3052				x		x	x
Torch Extension, Slotted	4060-010294	0047-3560				x		x	x
Torch Bonnet	4060-07	0047-2033				x	x	x	x
Purge Tube	4060-010296	0047-3187				x		x	x
Purge Tube for Slotted Extension	4060-010298	0047-3561				x		x	x

Spray Chambers and Accessories

Description	CPI P/N	PE® P/N	Plasma®		ICP				
			1000, 2000	Plasma® II	Plasma® 40 & 400	5000 6000	ICP 5500	ICP 5500B	ICP 6500
Spray Chamber, Type II, Glass	4060-82	N/A	x	x	x				x
Spray Chamber, Glass	4060-80	0047-2047				x	x	x	x
Spray Chamber, Concentric, Glass	4060-81	N/A				x	x	x	x
Spray Chamber, HF Resistant, Teflon	4060-010008	N/A	x	x	x	x	x	x	x

Nebulizers

Description	CPI P/N	PE® P/N	Plasma®		ICP				
			1000, 2000	Plasma® II	Plasma® 40 & 400	5000 6000	ICP 5500	ICP 5500B	ICP 6500
Twin Bore Nebulizer 30psi, 1L/min Ar, 3ml/min C-Type/ 0047-2020-A-Type	4060-010588	0047-2022-	x	x	x	x	x	x	x
Twin Bore Nebulizer 30psi, 0.7L/min Ar, 2-3ml/min	4060-010572	N068-1574	x	x	x	x	x	x	x

See our complete selection of nebulizers on page 66.

ORDERING COLITAG SPE TOX/AOX GC AAS ICP STANDARDS INDEX

PE[®] ICP (cont)

Pump Tubing

Description	CPI P/N	PE [®] P/N	Plasma [®]		ICP				
			1000, 2000	Plasma [®] II	Plasma [®] 40 & 400	5000 6000	ICP 5500	ICP 5500B	ICP 6500
Black-Black, 0.030" PVC, 12/pk	4062-530	0990-8587	x	x	x	x	x	x	x
Red-Red, 0.045" PVC, 12/pk	4062-445Kit	N068-0375	x	x	x	x	x	x	x
Black-Black, 0.030" Solvent Flex, 12/pk	4062-130A	0047-3550	x	x	x	x	x	x	x
Red-Red, 0.045" Solvent Flex, 12/pk	4062-145Kit	N068-0376	x	x	x	x	x	x	x
Black-Black, 0.030" Silicone, 6/pk	4062-230	N0047-3552	x	x	x	x	x	x	x
Orange-Red, 0.0075" Tygon Type, 12/pk	4062-010005	N069-5476	x	x	x	x	x	x	x
Black-White, 0.125" Tygon Type, 12/pk	4062-4125	N812-2012	x	x	x	x	x	x	x

Wavelength Calibration Standard

Wavecal 1 for PE [®] 40, 400, 1000, 2000			
CPI P/N	Volume		
4400-010130	100mL		
4400-010131	500mL		
µg/mL in 2% HCl			
As 20	Mn 20	P 100	
K 100	Mo 20	S 100	
La 20	Na 20	Sc 20	
Li 20	Ni 20		

Wavecal 2 for PE [®] 6000, 6500 (XR)			
CPI P/N	Volume		
4400-010128	100mL		
4400-010129	500mL		
µg/mL in 2% HCl			
Ba 50	Mn 20	Sc 20	
Be 20	Ni 20	Zn 20	
La 20			

Wavecal 3 for Optima 3000 [®] VIS			
CPI P/N	Volume		
4400-010124	100mL		
4400-010125	500mL		
µg/mL in 2% HNO ₃			
Ba 1	La 10	Mn 10	
Ca 1	Li 10	Na 10	
K 50	Sr 10		

Wavecal 4 for Optima 3000 [®] UV			
CPI P/N	Volume		
4400-010126	100mL		
4400-010127	500mL		
µg/mL in 2% HCl			
As 20	Mn 20	P 100	
K 100	Mo 20	S 100	
La 20	Na 20	Sc 20	
Li 20	Ni 20		

Optima 3000 [®] Multielement Standard			
CPI P/N	Volume		
4400-010200	100mL		
4400-010201	500mL		
µg/mL in 2% HNO ₃			
As 50	Mg 1	K 50	
Ba 1	Mn 10	Zn 10	
La 10	Ni 10		

Optima 3000 [®] Low UV Standard			
CPI P/N	Volume		
4400-010202	100mL		
4400-010203	500mL		
µg/mL in 2% HNO ₃			
Al 10	P 10	S 10	

Inductively Coupled Plasma

NEW!

Convenience, Corrosion Resistance, Complete Control!



Get it all in the ModBlock!

See page 18

Wavecal

These standards are used to center the analyte peak in the instrument window prior to analysis.

For a complete selection of CPI Peak Performance[™] Standards, see pages 74-91

NEW!

Specialized mixes for PerkinElmer[®] Optima[®] 3000 ICPs.

**Inductively
Coupled Plasma**

**NEW! PC³
Peltier Cooled Cyclonic
Spray Chamber!**



This cooled inlet reduces oxide formation and improves sensitivity – See page 69 for more information.



**O-ring Free Sapphire
Injectors for ICP and
ICP-MS**

Our sapphire injectors for ICP and ICP-MS are made from single-crystal sapphire tubes fitted into a PFA Teflon support. Sapphire injectors are ideal for the analysis of HF-containing samples, high-purity chemicals, and organic solvents. Adsorption, memory effects, and contamination problems found with molded alumina tubes are eliminated. These products achieve long lifetime due to the strength and chemical resistance of sapphire.

PE[®] OPTIMA[®]

Description	CPI P/N	PE [®] P/N	OPTIMA [®] 2000 & 4300	OPTIMA [®] 3000 & 3000 SC	OPTIMA [®] 3000 XL & 3000SC (X)	OPTIMA [®] 3000 DV
Torches and Injectors						
Torch Body, for OPTIMA 2000, 4000	4060-030	N077-0338	x			
Torch Body, for OPTIMA 3000 Radial	4060-03	N069-0568		x		
Horizontal Torch, for PE OPTIMA 3000XL	4060-031	N069-5379			x	
Torch OPTIMA, 3000DV, 1 Slot	4060-010051	N069-1662				x
Torch OPTIMA, 3000DV, 2 Slots	4060-032	N/A	x			
Quartz Injector 2.0mm ID, for Optima 2000, 4000	4060-010997		x			
Injector OPTIMA 3000, 1.2mm	4060-092	N069-1631		x		
Injector OPTIMA 3000, 1.6mm	4060-010052	N069-5448		x		
Injector OPTIMA 3000, 2.0mm	4060-010005	N069-5441		x		
Injector OPTIMA 3000 XL, 1.6mm	4060-034	N068-5449			x	x
Injector OPTIMA 3000 XL, 2.0mm	4060-033	N068-5442			x	x
Alumina Injector OPTIMA 3000 XL/DV 2.0mm	4060-010148	N069-5362			x	x
Alumina Injector, 2.0mm Type II, OPTIMA 3000	4060-010172	N058-2184		x		
Sapphire Injector	4060-010336					
Accessories						
Torch Bonnet OPTIMA, Flat Edge	4060-071	N069-5295		x		
Purge Extension Window	4060-085	N058-1497		x		
Quartz Bonnet, for OPTIMA 3000	4060-072	N069-5456		x		
Quartz Bonnet, for OPTIMA 3000DV	4060-010150	N069-1654			x	x
Purge Tube Window, Axial	4060-010157	N069-1678				x
Purge Tube Window, Radial	4060-010116	N069-1689				x
Purge Tube Window, Radial, Short	4060-010168	N069-0672				x
Purge Tube, OPTIMA DV	4060-010112	N069-1646				x
Spray Chambers & Accessories						
Spray Chamber with Baffle, for Optima 2000, 4000	4060-010927		x			
Spray Chamber without Baffle, for Optima 2000, 4000	4060-010790		x			
Spray Chamber, Type II, Glass	4060-82	N/A		x		
Cyclonic Spray Chamber, OPTIMA 3000	4060-010050	N/A		x		
Cyclonic Spray Chamber, OPTIMA 3000XL with Baffle	4060-083	N812-2188			x	x
Cyclonic Spray Chamber, OPTIMA 3000XL without Baffle	4060-010498				x	x
Nebulizers						
Twin Bore Nebulizer 30psi, 1L/min Ar, 3ml/min	4060-010588	0047-2022-C-Type		x	x	x
Twin Bore Nebulizer 30psi, 0.7L/min Ar, 2-3ml/min	4060-010572	N068-1574		x	x	x
See our complete selection of Nebulizers on page 66.						
Pump Tubing						
Black-Black, 0.030" PVC, 12/pk	4062-530	0990-8587		x	x	x
Red-Red, 0.045" PVC, 12/pk	4062-445Kit	N068-0375		x	x	x
Black-Black, 0.030" Solvent Flex, 12/pk	4062-130A	0047-3550		x	x	x
Red-Red, 0.045" Solvent Flex, 12/pk	4062-145Kit	N068-0376		x	x	x
Black-Black, 0.030" Silicone, 6/pk	4062-230	N0047-3552		x	x	x
Orange-Red, 0.0075" Tygon Type, 12/pk	4062-010005	N069-5476		x	x	x
Black-White, 0.125" Tygon Type, 12/pk	4062-4125	N812-2012		x	x	x

Torches and Bonnets

Description	CPI P/N	JY® P/N
Torch, one piece with ball joint	4060-01	49.010.100
Outer Quartz Tube	4060-65	31.023.722
Inner Quartz Tube	4060-66	31.023.723
Torch Bonnet	4060-07	49.010.101
Outer Quartz Tube, Axial	4060-010117	31.031.099
Sheath Gas, without fitting	4060-010127	21.356.040
Torch Assembly	4060-010132	21.356.110
Sheath Gas, Peek	4060-010135	20.925.160

Spray Chambers & Accessories

Description	CPI P/N	JY® P/N
Spray Chamber	4060-80	31.026.996
Cyclonic Spray Chamber, 12/5 4mm Drain	4060-515	31.030.809

Nebulizers

Description	CPI P/N	JY® P/N
Nebulizer, Fixed Cross Flow	4060-38	47.929.008

Pump Tubing

Description	CPI P/N	JY® P/N
Orange-Orange, 0.035" (0.89mm), 12/pk	4062-435	N/A
Gray-Gray, 0.051" (1.30mm), 12/pk	4062-451	N/A

*Inductively
Coupled Plasma*



*For our complete
selection of CPI
Peak Performance™
Standards for ICP-MS,
see pages 74 to 91*

**Inductively
Coupled Plasma**

Varian®

Torches and Bonnets

Description	CPI P/N	Varian® P/N
Torch, Low Flow	4060-55	20-100696-90
Torch Body, Demountable	4060-56	20-100729-90
Torch, ICP-AES, with Ball Joint	4060-010067	20-100696-00B
Torch, Axial, low flow, right angle sample inlet	4060-010003	20-100904-00
Torch, Axial, Demountable	4060-010070	20-100834-00
Torch, Axial, High Solid	4060-010838	
Torch Bonnet	4060-45	20-100707-90
Demountable Torch Kit, HF Resistant Includes: Torch Body, Alumina Injector, Tube Holder	4060-010312	99-100568-00
Demountable Torch Kit, HF Resistant, Axial Includes: Torch Body, Alumina Injector, Tube Holder	4060-010314	99-100847-00

Injectors

Description	CPI P/N	Varian® P/N
Sample Injector Tip, Quartz, 1.8mm 3/pk	4060-010144	99-100570-00
Sample Injector Tip, Alumina, 1.8mm	4060-010071	24-100675-90
Sample Injector Tip, 0.8mm 3/pk	4060-010145	20-100775-00
Injector Tube Holder, Teflon	4060-010072	99-100573-00

Spray Chambers & Accessories

Description	CPI P/N	Varian® P/N
Cyclonic Spray Chamber, 8mm, top port	4060-010069	N/A
Cyclonic Spray Chamber, Single Path for Liberty II	4060-010156	20-100817-00

Nebulizers

Description	CPI P/N	Varian® P/N
Teflon Parallel Path, Long Nose	4060-694	N/A
V-Groove Nebulizer, Peek	4060-010012	99-100574-00
Glass Twin Bore, 30psi, 1L/min, 3ml/min	4060-010588	20-100816-00
Glass Twin Bore, 30psi, 0.7L/min, 3ml/min	4060-010572	20-100695-00

Pump Tubing

Description	CPI P/N	Varian® P/N
Black-Black, 0.32 ml/min PVC, 12/pk	4062-430	37-100272-00
White-White, 0.60 ml/min PVC, 12/pk	4062-440	37-100344-00
Gray-Gray, 1.00 ml/min PVC, 12/pk	4062-451	37-100345-00
Blue-Blue, 1.60 ml/min PVC, 12/pk	4062-465	37-100346-00
Purple-Purple, 2.50 ml/min PVC, 12/pk	4062-481	37-100273-00

CPI Performance Point

Teflon Parallel Path Nebulizers offer comparable analytical performance to concentric nebulizers with superior high solids capability.

Spectro®

Torches

Description	CPI P/N	Spectro® P/N
Torch, Spectroflame	4060-20	75060596
Torch, Demountable, Spectroflame	4060-202	75060545
Torch, EOP, 2.5mm Injector	4060-010065	48105052
Torch, EOP, 2.2mm Injector	4060-010300	N/A
Torch, EOP, 1.8mm injector	4060-010302	N/A
Torch, EOP, Sheath Gas System	4060-010066	75160537

Injectors

Description	CPI P/N	Spectro® P/N
Injector Tube, Quartz 1.5mm	4060-010304	45105008
Injector Tube, Quartz 1.8mm	4060-010306	45105010
Injector Tube, Quartz 2.5mm	4060-010308	45105009

Spray Chambers & Accessories

Description	CPI P/N	Spectro® P/N
Spray Chamber, Large Double Pass	4060-010310	48105006
Spray Chamber, Upward, Conical	4060-21	48105003
Cyclonic Spray Chamber, 12/5 4mm Drain	4060-515	N/A

Nebulizers

Description	CPI P/N	Spectro® P/N
Cross Flow Nebulizer	4060-22	75060502
Twin Bore Nebulizer, Low Flow	4060-01572	N/A

Pump Tubing

Description	CPI P/N	Spectro® P/N
Orange-Orange, 0.035" (0.89mm), 12/pk	4062-435	N/A
Gray-Gray, 0.051" (1.30mm), 12/pk	4062-451	N/A

Inductively Coupled Plasma

CPI Performance Point
Cyclonic spray chambers improve RSDs and reduce washout time.

Other ICP Instrument Supplies

Torches and Bonnets

Description	CPI P/N	Instrument Type	Replaces OEM P/N
Torch, 27 MHz	4060-01	Baird®	025515
Torch, Plasma, PSX®, HF Resistant	4060-010044	Baird®	075129
Torch, Plasma PST®, Low Flow	4060-61	Baird®	075542
Torch, Plasma PST®, Low Flow, HF Resistant	4060-62	Baird®	075145
Torch, Plasma, PSX®	4060-63	Baird®	075128
Torch, Plasma, PSX®, Early Style	4060-010045	Baird®	069972
Torch & Tip, AFS®	4060-010046	Baird®	676458
Tip Replacements, AFS®	4060-010047	Baird®	676459
Bonnet	4060-07	Baird®	025491
Standard Torch	4060-01	Plasma Therm®	
Torch, High Solids	4060-010054	Plasma Therm®	
Bonnet	4060-07	Plasma Therm®	
Spray Chamber	4060-010339	Plasma Therm®	350120
Torch, Beveled	4060-010131	Phillips®	
Standard Torch	4060-01	Leco®	701-030
Slotted Torch, DIN	4060-010118	Cetac®/DIN	
ASX100® Type Autosampler Probe	4060-010410	Cetac®	SP5616
ASX500® Type Autosampler Probe	4060-010412	Cetac®	SP5229

Spray Chambers & Accessories

Description	CPI P/N	Instrument Type	Replaces OEM P/N
Spray Chamber	4060-80	Baird®, Leco®	Baird 025492



Probe for Cetac® ASX100
CPI P/N 4060-010410

Inductively Coupled Plasma



CPI's Twin Bore Nebulizer, P/N 4060-010572

CPI Performance Point

Always optimize your nebulizer. A change of one or two PSI in your gas pressure can vary your detection limits up to 30%.



Cross Flow Nebulizer for TJA® ICP's, CPI P/N 4060-38. Also available for Spectro® ICP's, CPI P/N 4060-22.



CPI V-Groove Nebulizer, P/N 4060-54

ICP Nebulizers

CPI Glass Twin Bore Nebulizers have been manufactured for durability and performance. The sample path inner diameter is designed to be narrow enough to provide a fine, consistent aerosol but not so small that the nebulizer is susceptible to clogging. Each nebulizer tip is finished to precise specifications to ensure a uniform aerosol pattern. All dimensional and performance specifications are checked as part of quality control. These nebulizers are economically priced and guaranteed for performance in your ICP.

Glass Twin Bore Nebulizers

CPI P/N	Argon Press (PSI)	Argon Flow (Liters/min)	Sample Flow (mL/min)	Suggested Instrument Application
4060-010572	30	0.7	2-3	All (or 4060-010592 w/Sample Tube)
4060-010593	50	0.7	2-3	Jobin Yvon®
4060-010588	30	1	3	ARL® 3500 Series, Varian® Axial, PerkinElmer®, Elan® 5000/6000
4060-010594	30	1	2	All (call for other sample flow rates)

Cross Flow Nebulizers

Our durable cross flow nebulizers for TJA® and Spectro® ICP's are made from PEEK plastic and include a sealing o-ring, argon inlet fitting and Teflon® sample uptake line. The platinum sample introduction stem is recessed into the body of the nebulizer to prevent breakage. A consistent, pinpoint aerosol is created via a precision sapphire orifice at the gas inlet. We guarantee our cross flow nebulizers to meet or exceed OEM specifications and to perform in your ICP.

Description	CPI P/N	OEM P/N
Cross Flow Nebulizer, for TJA®	4060-38	TJA® / 126989-00
Cross Flow Nebulizer, for Spectro®	4060-22	Spectro® / 75060502
High Solids Cross Flow Nebulizer, for HP®	4060-010390	HP® / G1820-65033
O-Ring for Cross Flow Nebulizer	4060-381	TJA® / 133202-50
Argon Inlet Fitting, for 4060-38 or 4060-22	4060-382	n/a

Endcaps

Description	CPI P/N
Teflon endcap, concentric/6mm nebulizers, 35mm	4060-010344
Teflon endcap, 1/2" nebulizers, 35mm	4060-691
PFA Teflon PureCap endcap, 47mm	4060-010600
Teflon endcap, 1/2" nebulizers, 34mm	4060-010342

V-Groove and Babbington Nebulizers

Description	CPI P/N
Babbington V-Groove Nebulizer, Peek, 1/2"OD	4060-54

Sample Tubes and Cups

As a complement to our ICP quartzware CPI is pleased to offer high quality polypropylene, polystyrene and polyethylene sample tubes and sample cups. We are committed to offering only the highest quality sample vessels to facilitate your analyses. Our use of pure plastics results in sample cups and centrifuge tubes that are free of metal contamination and do not need to be tediously washed prior to use. In addition, high precision molding ensures that all vessels are free of leaks and have consistent dimensions so they fit securely in your ICP sample tray. Please call for free product samples or quantity discounts on sample tubes and cups.

ICP Sample Tubes

Description	CPI P/N	Autosampler/OEM P/N
13 x 100mm Polypropylene Tube, 1000/pk	4092-327	TJA®, PE®, Varian®, most other ICP's
13 x 100mm Polystyrene Tube, 1000/pk	4092-324	TJA®, PE®, Varian®, most other ICP's
12 x 75mm Polypropylene Tube, 1000/pk	4092-330	TJA® / Technicon®
16-17mm x 100mm, Polypropylene Tube, 1000/pk	4092-320	PE® AS-90, most TJA
16-17mm x 100mm, Polypropylene Tube, 10,000/pk	4092-321	PE® AS-90, most TJA
15mL Conical Bottom Tube, Polystyrene, 125/pk	4092-314	PE® AS-50/51 / 0047-1441
Centrifuge Tube, 15ml, Polypropylene, METAL FREE, 500/pk	4092-316	PE® AS-90/91 / B019-3233
Centrifuge Tube, 50ml, Polypropylene, METAL FREE, 500/pk	4092-400	PE® AS-90/91 / B019-3234

ICP Nebulizers

Teflon® Parallel Path and Mira Mist Nebulizers

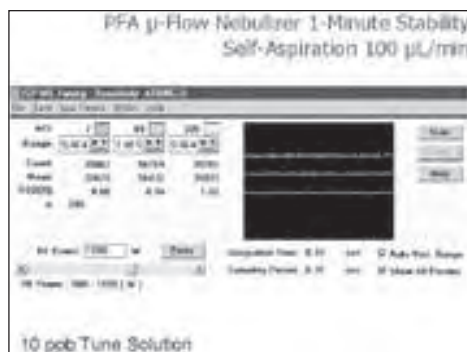
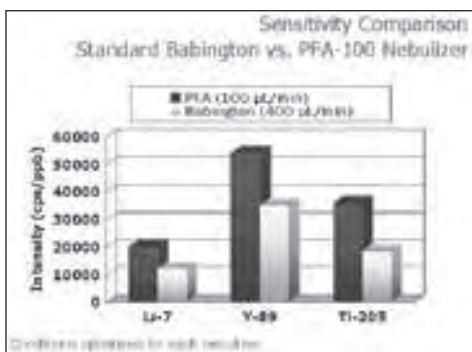
This Teflon Parallel Path Nebulizer has the convenience of concentric glass nebulizers with the advantage of a unique, unrestricted sample path. The sample path has a constant diameter from the pump to the gas orifice, so there is no capillary plugging. The Teflon Mira Mist is an enhanced Parallel Path Teflon Nebulizer operating on 0.2 ml/min to 2.5 ml/min. The PEEK Mira Mist is also available for most samples, but not concentrated acids, and not some organic solvents.

Description	CPI P/N	OEM P/N
Parallel Path Teflon Nebulizer, 25 to 45 psi	4060-69	n/a
Long Nose, High Solids Teflon Nebulizer and Fittings	4060-694	TJA® / 136388-00
Mira Mist Teflon Nebulizer	4060-010694	n/a
Mira Mist PEEK Nebulizer	4060-010695	n/a

Teflon® PFA MicroFlow Nebulizer

The Right Nebulizer Technology for ICP-MS and ICP-AES...

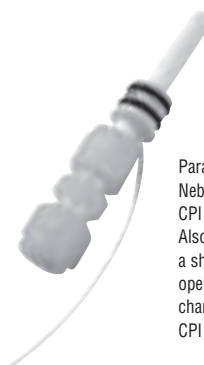
The MicroFlow PFA nebulizer is an all-Teflon low-flow micro-concentric nebulizer designed for ultratrace elemental determinations in a wide range of chemicals, including concentrated acids, HF, organic solvents and high dissolved solids solutions. Reliable self-aspiration is a key feature of this nebulizer that allows undiluted high-purity chemicals to be analyzed without contamination from peristaltic pump tubing. Constructed without any metal, sapphire, or other non-fluoropolymer parts permits aggressive cleaning using aqua regia (80°C) or HF/HNO₃ mixtures, ensuring long-lifetime and the lowest background (BEC) of any nebulizer on the market. MicroFlow PFA resists formation of salt deposits and is ideal for high dissolved solids solutions, such as acidified seawater. MicroFlow-PFA nebulizers have a 6mm OD, may be self-aspirated or used with a peristaltic pump.



Inductively Coupled Plasma



MiraMist Peek Nebulizer, CPI P/N 4060-010695.



Parallel Path Teflon Nebulizer, CPI P/N 4060-694. Also available with a short nose for open-ended spray chambers, CPI P/N 4060-69.



CPI's PFA Micro-Flow Teflon Nebulizer, available in 20, 50, 100 or 400µl/min.



The CPI PFA Micro-Flow Nebulizer produces a fine aerosol for high transport efficiency and high sensitivity.

Background (BEC) and Detection Limits (DL)

Isotope	²³ Na	²⁷ Al	³⁹ K	⁴⁴ Ca	⁵⁶ Fe	⁶³ Cu	⁶⁴ Zn
BEC (ppt)	0.8	0.2	0.3	0.9	0.2	0.2	0.6
DL (ppt)	0.09	0.06	0.05	0.5	0.07	0.08	0.1

Class 1 cleanroom, Finnigan® ELEMENT ICP-MS, PFA-100

PFA MicroFlow Nebulizers

Description	CPI P/N
PFA MicroFlow Nebulizer 20µl/min	4060-010191
PFA MicroFlow Nebulizer 50µl/min	4060-010190
PFA MicroFlow Nebulizer 100µl/min	4060-010192
PFA MicroFlow Nebulizer 400µl/min	4060-010194
PFA ST Nebulizer 20µl-2ml/min	4060-010193

Inductively Coupled Plasma



A complete PFA Upgrade Kit with PFA MicroFlow Nebulizer, Spray Chamber and O-ring Free Sapphire Injector.

Interested In Application-Specific Data?

CPI maintains a library of application data specific to PFA MicroFlow nebulizers, upgrade kits, PC³ inlets, APEX high sensitivity inlets, and other products in use on popular instrumentation. Visit our web site or call for more information.

Table Legend

All "Kits" include the following components:

- 2 PFA MicroFlow Nebulizers (specify desired flow rate)
- PFA O-ring Free Chamber Endcap
- PFA Teflon Spray Chamber
- O-ring Free Injector mounted in PFA base (injector material sapphire, Pt or quartz depending on kit selected)
- Quartz Torch designed for injector
- All required gas lines and fittings

All "PC³ Inlets" include the following components:

- Quartz Cyclonic Spray Chamber, O-ring Free with PFA ferrule-nut
- Peltier-cooled PC³ Housing
- 12 volt power supply

See feature section on the PC³ on page 69 opposite.

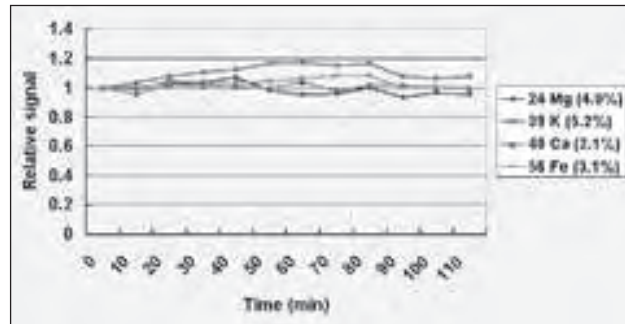
Note: Kits may be tailored to your specifications, including nebulizer selection, integrated autosampler probes and injector choice. Call for polypropylene spray chamber and other options in PC³ configuration.

PFA Teflon and Corrosion Resistant Inlets

CPI International offers a range of nebulizers and complete sample introduction kits specially designed for analytical laboratories running challenging samples by ICP-MS/AES. These systems are made from inert PFA Teflon, sapphire or platinum and allow contamination-free analysis of a wide range of samples, including organic solvents, aggressive chemicals and concentrated acids.

This product line includes self-aspirating, integrated-capillary PFA Teflon MicroFlow nebulizers, polypropylene nebulizers, o-ring-free PFA endcaps, o-ring-free sapphire or platinum injectors, o-ring-free demountable torches, PFA Teflon spray chambers, inert, non-contaminating autosampler probes, as well as complete PFA upgrade packages for all ICP-MS and ICP-AES instruments. Also featured are PFA Teflon pipette tips, digestion vessels and autosampler tubes.

Element	Std	HF (ppb)	DL (ppb)	50 ppt res (%) with SESA	50 ppt res (%) with 1% HNO ₃ EXT	50 ppt res (%) with 1% HNO ₃ EXT
B	11	86.3	30.6	111	423	81.2
Na	23	3.74	3.87	117	189	112
Mg	24	1.18	3.89	113	169	166
Al	27	3.88	1.47	100	147	119
K	39	2.47	1.34	109	189	84.3
Ca	40	3.35	1.51	87.5	114	118
Ti	48	1.90	8.77	102	149	191
Cr	52	88.0	12.4	101.1	18.3	48.8
Mn	55	2.29	1.28	107	102	102
Fe	56	2.20	6.88	118	100	10.3
Ni	58	7.29	1.18	103	147	142
Br	80	11.5	1.88	106	126	88.3
Cu	63	4.82	1.88	110	81.8	84.7
Zn	64	17.8	7.21	101	83.2	100
Pb	78	4.9	38.8	114	85.4	100
Sr	138	8.05	2.48	111	84.1	100
Sn	118	1.82	1.25	116	89.6	104
Hg	197	9.68	3.34	103	142	81.3
Pg	209	8.38	8.18	108	173	87.8



This table summarizes the quantitative analysis of 40% HF run on a PerkinElmer ELAN DRC. The Sample introduction system is a PFA Upgrade Kit with Pt injector and a self-aspirated PFA MicroFlow 100uL/min nebulizer. Elements in light type are run in DRC mode.

This table is a 2 hour stability run of 0.5 ppb spiked in 500 ppm Si, on a PerkinElmer ELAN DRC. The Sample introduction system is a PFA Upgrade Kit with Pt injector and a self-aspirated PFA MicroFlow 20uL/min nebulizer.

Popular Upgrade Kits and Cooled Inlets - See Legend

Instrument	PFA Sapphire Kit	PFA Pt Kit	PFA Quartz Kit	PC ³ Inlet
ICP-MS Instrumentation				
Agilent/HP 4500	4060-010651	4060-010652	4060-010653	4060-530101-000
Agilent/HP 7500	4060-010955	4060-010954	4060-010857	4060-531101-000
Thermo-Finnigan Element	4060-010578	4060-010668	4060-011010	4060-502101-100
MicroMass Platform	4060-010888	4060-010889	4060-010891	4060-540101-100
MicroMass PT2	4060-010886	4060-010887	4060-010893	4060-543101-100
PE Elan 5000/6000/9000/DRC	4060-010994	4060-010995	4060-010993	4060-510101-100
Thermo-VG Excel	4060-010885	4060-010884	4060-010879	4060-522101-100
Thermo-VG PQ Series/Axiom	4060-010755	4060-010654	4060-010655	4060-521101-100(PQ) 4060-520101-100(AX)
ICP-AES Instrumentation				
PE Optima 3000 Series Radial	4060-010951	4060-010949	4060-010950	4060-511100-100
PE Optima 3000 Series Axial	4060-010735	4060-010734	4060-010733	4060-514100-100
PE Optima 3000 Series DV	4060-011012	4060-011014	4060-011016	4060-512100-100
PE Optima 2000/4000 Series DV	4060-010826	4060-010825	4060-010827	4060-513100-100
Varian Vista Axial	4060-010906	4060-011018	4060-011020	4060-550100-100
Spectro Ciros Radial	4060-010769	4060-011022	4060-011024	4060-561100-100
Spectro Ciros Axial	4060-010764	4060-011026	4060-011028	4060-560100-100
TJA 61E Radial	4060-010740	4060-010938	4060-011030	4060-571100-100
TJA Trace Axial	4060-010739	4060-011032	4060-011034	4060-570000-100
TJA Iris Radial	4060-010738	4060-011036	4060-011038	4060-571100-100
JY Axial	4060-011040	4060-011042	4060-011044	4060-597100-100
JY Radial	4060-011046	4060-011048	4060-011050	4060-596100-100

Note: Kit p/n's above include as standard 2 100uL/min nebs for ICP-MS, and 2 PFA-ST 1mL/min nebs for ICP-AES. However, you may select nebs with different flow rates if desired, simply call for information and a unique p/n will be provided for your neb configuration.

PFA Teflon and Corrosion Resistant Inlets

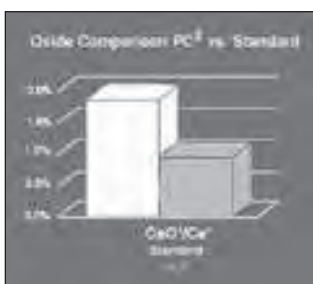
CPI offers three basic types of PFA Teflon nebulizers; the integrated capillary PFA MicroFlow nebulizer series, the removable capillary PFA-ST nebulizer series and the integrated autosampler probe series. All nebulizers offer chemical resistance, low spike-free BEC, resistance to clogging/salting, high transport efficiency and may be reliably self-aspirated or pumped. See page 67 for detail performance data on the PFA MicroFlow line of nebulizers or call CPI for data from a range of applications.

PFA MicroFlow Nebulizers, Sample Probes and Accessories

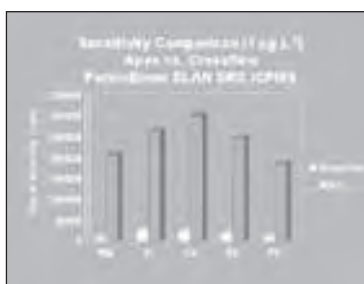
Description	CPI P/N
General use PFA Nebulizers	
PFA MicroFlow 20ul/min	4060-010191
PFA MicroFlow 50ul/min	4060-010190
PFA MicroFlow 100ul/min	4060-010192
PFA MicroFlow 400ul/min	4060-010194
PFA-ST Nebulizer, 1-2mL/min (specify flow)	4060-010193
PFA PureCap Endcap, 6mm nebs, 35mm ID	4060-010600
Specialty Nebulizers	
PFA MicroFlow Nebulizer, 20-A for MCN-6000/ARIDUS	4060-010215
PFA MicroFlow Nebulizer, 50-A for MCN-6000/ARIDUS	4060-010219
Complete Upgrade Kit for MCN-6000/ARIDUS (nebulizers, chimney, cap)	4060-010650
Apex PFA Nebulizer, 50ul/min	4060-011052
Apex PFA Nebulizer, 100ul/min	4060-011054
Apex-ST PFA Nebulizer, 100, 300, 500ul/min	4060-011056
PolyPro Polypropylene Nebulizer, 1-2mL/min	4060-010189
Sample Probes (may be ordered integrated, union-free, with any nebulizer)	
Probe, Autosampler, ASX-500, Standard Type, 1/pk	4060-010412
Probe, Autosampler, ASX-500, Low Flow Type, 1/pk	4060-010413
Probe, Autosampler, ASX-500/510, PFA, .25mm ID	4060-010414
Probe, Autosampler, PE AS90, PFA, 1/Pk	4060-010504
Probe, Autosampler, PE AS93, PFA	4060-010506
Probe, PFA, ASX-500	4060-010842
PFA and Polypropylene Spray Chambers	
Scott-type and cyclonic models in stock for all instrumentation	Call for desired configuration
PFA PureCap Endcap, 6mm nebs, 35mm ID	4060-010600
Other High Purity PFA Accessories	
PFA Vial, Conical, 7mL, w/ tray, 10pk	4060-010947
PFA Puretup, 1000uL, 100pk	4060-010405
PFA Puretup, 100uL, 100pk	4060-010403
PFA Sample Cup 1.5mL, for ASX 100/400, 10/pk	4060-010982
PFA Sample Cup, 4mL, For ASX 100/400, 10/pk	4060-010983

PC³ Peltier-Cooled Cyclonic Spray Chamber

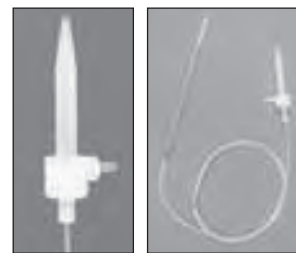
The PC³ is the first Peltier-cooled cyclonic spray chamber for ICP-MS/AES. The cyclonic chamber delivers low-memory effects, fast rinse-out, and higher transport efficiency. The PC³ cools the cyclonic spray chamber to a constant temperature, reducing polyatomic ion interferences, such as oxides, for ICP-MS analyses. The PC³ also reduces solvent loading when volatile organic solvents are analyzed. Thermal stabilization of the spray chamber also enhances long-term stability for both ICP-MS and ICP-AES, particularly for laboratories where room temperature is not constant. A PFA MicroFlow nebulizer or any 6 mm nebulizer may be used with the PC³. The nebulizer attaches to the o-ring-free cyclonic spray chamber using a one-piece Teflon PFA ferrule-nut. Cyclonic spray chambers for the PC³ are available in quartz, polypropylene, or glass.



Call CPI for additional performance data from specific instrumentation and applications.



Inductively Coupled Plasma



PFA MicroFlow 100ul/min Nebulizer.

PFA Nebulizers may be ordered with union-free integrated autosampler probes. Probes are also available separately.



CPI's PolyPro Polypropylene Nebulizer is an economical, corrosion resistant replacement for Glass Concentric Nebulizers. CPI P/N 4060-010189.



Polypropylene Cyclonic Chambers for popular ICP-MS/AES – Call for part numbers.



PC³ Integrated Peltier-cooled Cyclonic Spray Chamber. Fits popular ICP-MS/AES instruments. (See ordering table on opposite page 68).

PC³ Performance Features:

- Increased sensitivity over Scott-type chamber
- Reduced washout – high sample throughput
- User selectable temperature +2°C/-5°C
- Reduces oxide interferences
- Reduces organic solvent loading
- Plug & play – no water lines to connect

Inductively Coupled Plasma



- 2-stop tubing overall length is 16", with a 6" center pumping section separated by two color-coded stops.
- CPI also offers 3 stop tubing per OEM specifications.
- Viton® Tubing for Mercury analyzers has an overall length of 7" and also includes two stops.

Please call for quantity discounts on CPI tubing products.

Call For Pricing On Tubing Sizes Not Shown.

Peristaltic Pump Tubing

As a complement to our ICP Quartzware and Sample Tubes, CPI offers a comprehensive selection of multipurpose peristaltic pump tubing. All tubing features color-coded stops for easy determination of size and is available in Standard PVC or Solvent Resistant PVC (yellow tinted), Viton, Silicone or Santoprene.

Two-Stop Peristaltic Pump Tubing

Description	Standard PVC (12/pk)	Solvent Resistant (12/pk)	Santoprene (12/pk)	Silicone (6/pk)	Viton (12/pk)
	CPI P/N	CPI P/N	CPI P/N	CPI P/N	CPI P/N
org-blk, 0.13mm	4062-413	4062-113	4062-019013	4062-213	4062-8713
red-org 0.19mm	4062-407	4062-107	4062-019007	4062-207	4062-8707
org-blu, 0.25mm	4062-410	4062-110	4062-019010	4062-210	4062-8710
org-grn, 0.38mm	4062-415	4062-115	4062-019015	4062-215	4062-8715
org-yel, 0.51mm	4062-420	4062-120	4062-019020	4062-220	4062-8720
org-wht, 0.64mm	4062-425	4062-125	4062-019025	4062-225	4062-8725
blk-blk, 0.76mm	4062-430	4062-130	4062-019030	4062-230	4062-8730
org-org, 0.89mm	4062-435	4062-135	4062-019035	4062-235	4062-8735
wht-wht, 1.02mm	4062-440	4062-140	4062-019040	4062-240	4062-8740
red-red, 1.14mm	4062-445	4062-145	4062-019045	4062-245	4062-8745
gry-gry, 1.30mm	4062-451	4062-151	4062-019051	4062-251	4062-8751
yel-yel, 1.42mm	4062-456	4062-156	4062-019056	4062-256	4062-8756
yel-blu, 1.52mm	4062-460	4062-160	4062-019060	4062-260	4062-8760
blu-blu, 1.65mm	4062-465	4062-165	4062-019065	4062-265	4062-8765
blu-grn, 1.75mm	4062-495	4062-195	4062-019095	4062-295	4062-8795
grn-grn, 1.85mm	4062-473	4062-173	4062-019073	4062-273	4062-8773
pur-pur, 2.06mm	4062-481	4062-181	4062-019081	4062-281	4062-8781
pur-blk, 2.29mm	4062-490	4062-190	4062-019090	4062-290	4062-8790
pur-wht, 2.79mm	4062-4109	4062-1109	4062-0190109	4062-2109	4062-87109
blk-wht, 3.18mm	4062-4125	4062-1125	4062-0190125	4062-2125	4062-87125

Three-Stop Peristaltic Pump Tubing

Description	Standard PVC (12/pk)	Solvent Resistant (12/pk)	Santoprene (12/pk)	Silicone (6/pk)	Viton (12/pk)
	CPI P/N	CPI P/N	CPI P/N	CPI P/N	CPI P/N
org-red-org 0.19mm	4062-5008	4062-6008	4062-0191008	4062-7008	4062-8008
org-blu-org, 0.25mm	4062-510	4062-610	4062-019110	4062-710	4062-810
org-grn-org, 0.38mm	4062-5015	4062-6015	4062-0191015	4062-7015	4062-8015
org-yel-org, 0.51mm	4062-520	4062-620	4062-019120	4062-720	4062-820
org-wht-org, 0.64mm	4062-525	4062-625	4062-019125	4062-725	4062-825
blk-blk-blk, 0.76mm	4062-530	4062-630	4062-019130	4062-730	4062-830
org-org-org, 0.89mm	4062-535	4062-635	4062-019135	4062-735	4062-835
wht-wht-wht, 1.02mm	4062-540	4062-640	4062-019140	4062-740	4062-840
red-red-red, 1.14mm	4062-545	4062-645	4062-019145	4062-745	4062-845
gry-gry-gry, 1.30mm	4062-550	4062-650	4062-019150	4062-750	4062-850
yel-yel-yel, 1.42mm	4062-555	4062-655	4062-019155	4062-755	4062-855
yel-blu-yel, 1.52mm	4062-560	4062-660	4062-019160	4062-760	4062-860
blu-blu-blu, 1.65mm	4062-565	4062-665	4062-019165	4062-765	4062-865
blu-grn-blu, 1.75mm	4062-595	4062-695	4062-019195	4062-795	4062-895
grn-grn-grn, 1.85mm	4062-573	4062-673	4062-019173	4062-773	4062-873
pur-pur-pur, 2.06mm	4062-581	4062-681	4062-019181	4062-781	4062-881
pur-blk-pur, 2.29mm	4062-590	4062-690	4062-019190	4062-790	4062-890
pur-wht-pur, 2.79mm	4062-946	4062-646	4062-019146	4062-746	4062-846
blk-wht-blk, 3.18mm	4062-5125	4062-6125	4062-0191125	4062-7125	4062-8125

Capillary and General Use Tubing

These products are available for miscellaneous applications and as replacement components of other CPI products, such as our Cross Flow Nebulizer and Sample Probes.

Description	CPI P/N	Application / OEM P/N
Teflon® Tubing, 3/16 id x 5/16 od (Specify custom length)	4061-01	miscellaneous
Teflon® Tubing, .026 id x .050 od (Specify custom length)	4097-302	TJA® / 133006-00 / 042982-00
Teflon® Tubing, .020 id, for TJA® Sipping Probe, 1 ft	4097-308	See CPI P/N 4097-30
Teflon® Tubing, .031 id, for TJA® Sipping Probe, 1 ft	4097-309	See CPI P/N 4097-30
Teflon® Tubing, .063 id x .125 od (Specify custom length)	4097-322	TJA® / 043437-00
Teflon® Tubing, .6mm id, 10 ft	4060-38TT	PE® / 0990-8265, TJA® / 311390-14
Viton® Tubing, for Hydride Cell (Specify custom length)	4090-255	Varian® / 37-100263-90

Specialty OEM Pump Tubing

In addition to multipurpose pump tubing, CPI also offers custom pump tubing designs to accommodate material and dimensional requirements of certain OEM applications. These products incorporate Standard PVC, Solvent Flex PVC, Accu-Rated PVC, Silicon or Viton® material as per OEM specifications.

Description	CPI P/N	OEM P/N
TJA® Type 3-Stop Pump Tubing		
Orange-Red-Orange, .0075", PVC, 12/pk	4062-5008	
Orange-Green-Orange, .015", PVC, 12/pk	4062-5015	
Orange-Orange, 0.035" (.89mm), Standard PVC, 12/pk	4062-535	130177-00
Red-Red, 0.045" (1.14mm), Standard PVC, 12/pk	4062-545	130177-01
Orange-Orange, 0.035" (.89mm), Silicone, 6/pk	4062-735	130177-02
Red-Red, 0.045" (1.14mm), Silicone, 6/pk	4062-745	130177-03
Orange-Orange, 0.035" (.89mm), Viton, 6/pk	4062-835	130177-04
Red-Red, 0.045" (1.14mm), Viton, 6/pk	4062-845	130177-05
Purple-Black-Purple, 0.081" (2.06mm), Viton, 1/pk	4062-881	131856-00
Yellow-Yellow, .056" (1.42mm), Viton, 12/pk	4062-356	
Internal Standard Mixing Kit, 4/pk	4062-910	136708-00
<i>This product allows for simultaneous introduction of sample and internal standard.</i>		
PerkinElmer® Type 2-Stop Pump Tubing		
Black-Black, 0.030" (.76mm), Standard PVC, 12/pk	4062-430	0990-8587
Red-Red, 0.045" (1.14mm), Standard PVC, 12/pk	4062-445Kit	N068-0375
Black-Black, 0.030" (.76mm), Solvent Flex, 12/pk	4062-130A	0047-3550
Red-Red, 0.045" (1.14mm), Solvent Flex, 12/pk	4062-145Kit	N068-0376
Black-Black, 0.030" (.76mm), Silicone, 6/pk	4062-230	0047-3552
PerkinElmer® Type 3-Stop Pump Tubing		
Black-Black, 0.030" (.76mm), Standard PVC, 12/pk	4062-530	B050-6058
White-White, 0.040" (1.02mm), Solvent Flex, 12/pk	4062-640	B050-7692
Red-Red, 0.045" (1.14mm), Standard PVC, 12/pk	4062-545	B019-3160
Yellow-Blue-Yellow, 0.060" (1.52mm), Std PVC, 12/pk	4062-560	B019-3161
Purple-Purple, 0.081" (2.06mm), Standard PVC, 12/pk	4062-581	B019-9034
Black-White-Black, 0.125" (3.18mm), Std PVC, 12/pk	4062-5125	B050-8310
Varian® Type 2-Stop Pump Tubing		
Black-Black, 0.32 ml/min, Accu-Rated PVC, 12/pk	4062-430	37-100272-00
White-White, 0.60 ml/min, Accu-Rated PVC, 12/pk	4062-440	37-100344-00
Gray-Gray, 1.00 ml/min, Accu-Rated PVC, 12/pk	4062-451	37-100345-00
Blue-Blue, 1.60 ml/min, Accu-Rated PVC, 12/pk	4062-465	37-100346-00
Purple-Black, 2.50 ml/min, Accu-Rated PVC, 12/pk	4062-481	37-100273-00
Leeman® PS 200 Type Tubing		
Drain Tubing, for PS 200, 12/pk	4062-902	902-00014
Sample Tubing, for PS 200, 12/pk, PVC	4062-010004	125-00114-2
Sample Tubing, for PS 200, 12/pk, Viton®	4062-903	309-00030/32
Reductant Tubing, for PS 200, 12/pk	4062-904	309-00033
Leeman® PS 1000 / 2000 / 3000 Type Tubing		
Orange, 0.020", PVC, 12/pk	4062-920	309-3551
Black, 0.030", PVC, 12/pk	4062-930	309-3552
Red, 0.045", PVC, 12/pk	4062-945	309-3538
Disposable Uptake Line, for PS 1000/2000/3000, 1/pk	4062-905	120-00168

Inductively Coupled Plasma

Try our Internal Standard Mixing Kit for TJA® TraceScan® instrumentation, CPI P/N 4062-910. This product allows for simultaneous introduction of sample and internal standard.

Internal Standard Mixing Kits

Description	CPI P/N
Internal Std Mixing Kit, TJA, 4pk	4062-910
Internal Mixing Kit - 2stop, org-wht (2), org-red (1), 4 pk	4062-914
Internal Mixing Kit - 2stop, grn-grn (2), org-blk (1), 4pk	4062-916
Internal Std Mixing Kit, 2stop, 4pk	4062-947



Sample Tubing for Leeman® PS 200, CPI P/N 4062-903. Also available in PVC P/N 4062-010004.



Reductant Tubing for Leeman® PS 200, CPI P/N 4062-904.



Disposable Sample Uptake Line for Leeman® PS 1000 / 2000 / 3000 ICP. CPI P/N 4062-905, 1/pk.

Disposable Sample Uptake Line for Leeman® PS 1000 / 2000 / 3000 ICP

If you are experiencing sample carryover on your Leeman® PS 1000 / 2000 / 3000 ICP, this product can help solve your problem! Made from high quality PVC tubing, this sample line is designed to be a disposable replacement for the Uptake Tubing Kit provided as original equipment. Instead of using separate sections of tubing which independently need replacing, this product is made from a single strand of tubing to deliver the sample from the probe to the pump and on to the nebulizer without connectors. The tubing inner diameter and stop positioning are consistent with OEM specifications. In addition to eliminating carryover and simplifying the sample path, this product costs less than replacing the original uptake line. **Order CPI P/N 4062-905.**

Inductively Coupled Plasma



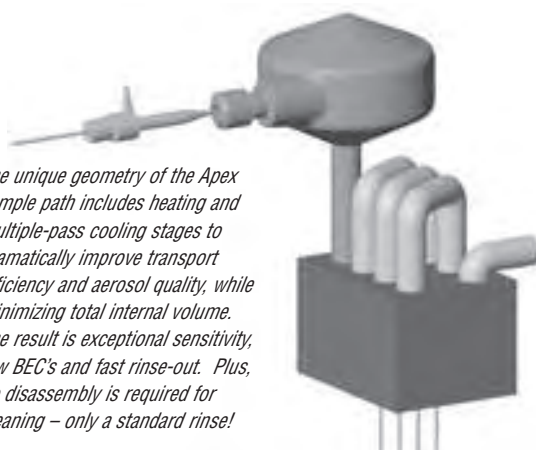
Apex Performance Features:

- Patent-pending technology increases instrument sensitivity more than 10 times over the standard inlet, even for challenging elements such as Na, Al, K, Ca, Fe, Ni and Zn.
- Utilizes proven MicroFlow PFA nebulizer technology for self-aspiration of 20 $\mu\text{L}/\text{min}$ to 1 mL/min with improved stability.
- Patented geometry and reduced sample adhesion produce faster rinse-out times; cleans quickly and easily between applications without concentrated acids or solvents.
- Installs on popular ICP-MS/AES instruments in minutes; connects directly to torch injector.
- Allows existing instrumentation to be leveraged into new applications with Apex's significantly improved sensitivity and reduced backgrounds.
- Excellent transport efficiency; delivers nearly 100% of sample in usable form to the ICP.
- Non-contaminating inlet; utilizes an o-ring-free PFA Teflon and quartz sample path to achieve maximum chemical resistance and minimize BEC's (also available with a complete PFA sample path for samples containing hydrofluoric acid).
- Reduces oxide formation and interferences; ideal for isotope ratio analyses.
- 12 volt operation for reliability and simplicity.

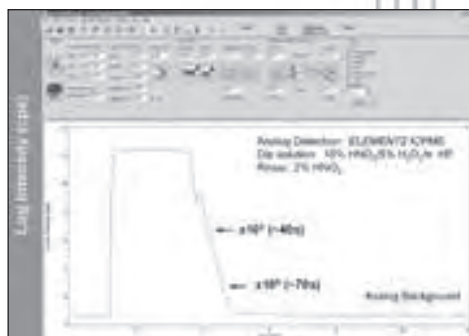
APEX High Sensitivity Inlet Systems



The Apex is a fully integrated, high sensitivity sample introduction system that connects in minutes to the OEM injector on popular ICP-MS/AES instrumentation.

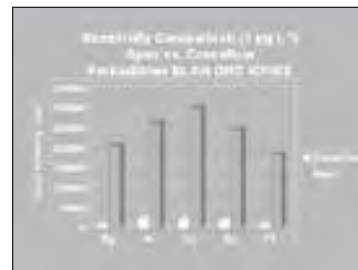


The unique geometry of the Apex sample path includes heating and multiple-pass cooling stages to dramatically improve transport efficiency and aerosol quality, while minimizing total internal volume. The result is exceptional sensitivity, low BEC's and fast rinse-out. Plus, no disassembly is required for cleaning – only a standard rinse!



Rinse-out performance for the Apex IR, configured with a PFA MicroFlow 100uL nebulizer. Shown here, ^{232}Th rinse-out greater than 100000x down to analog background in less than 1.5 minutes.

The Apex family of high sensitivity and low background sample introduction systems are designed to increase signal intensity while often reducing relative background contamination for ICP-MS and ICP-AES analyses. The Apex improves sensitivity more than 10 times over the standard inlet primarily by increasing both sample transport efficiency and the quality of aerosol introduced to the ICP instrument. The Apex controls background contamination by employing high-purity, inert, and o-ring-free wetted surfaces. When combined with a self-aspirating MicroFlow PFA nebulizer even aggressive and concentrated chemicals may be analyzed at very high sensitivity and very low background. The Apex may be used with self-aspirated or pumped nebulizers operating over a wide range of sample flow rates from 20 $\mu\text{L}/\text{min}$ to over 1 mL/min. An optional ACM actively cooled Nafion fluoropolymer membrane desolvation module is available for addition to the Apex.



The Apex includes an integrated four-channel peristaltic pump to drain from four locations in the sample path, preventing spiking, preserving high transport efficiency and ensuring fast rinse-out.

APEX High Sensitivity Inlet Systems

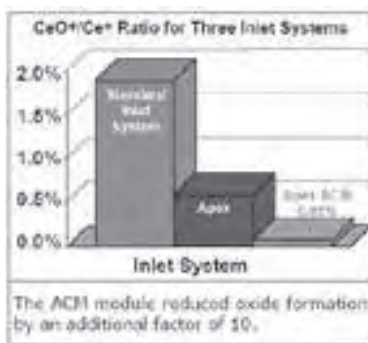
ACM Membrane Desolvator

The ACM is a cooled Nafion® fluoropolymer membrane desolvation module designed to operate with the Apex system that reduces the intensity of solvent-derived polyatomic ion interferences in the ICP-MS mass spectrum. Polyatomic ions such as oxides, hydrides and others may form when oxygen or hydrogen derived from water or other solvents combine with species present in the sample or in the ICP. In many cases these interferences limit the accuracy or precision of ICP-MS determinations.

Solvent vapor from the sample aerosol stream permeates through the membrane and evaporates into an external stream of dry sweep gas. The dried sample aerosol stream exits the ACM module through a fluoropolymer tube and is conducted to the ICP-MS injector. The microporous Nafion® fluoropolymer membrane does not allow the sweep gas to permeate into the sample aerosol stream, improving long-term flow and signal stability. The ACM membrane tolerates a variety of complicated sample matrices without plugging.



The ACM membrane desolvator easily mounts/demounts from the Apex exit port. Thus, the Apex may be used either with or without an ACM to best suit specific applications. No cooling lines are needed – simply plug the ACM into the 12 VDC power supply included with the unit and switch it on.



With the ACM membrane desolvation module, oxides and other ICP-MS interferences are further reduced. For example, CeO⁺/Ce⁺ was reduced to < 0.05% when using the Apex with the ACM module membrane desolvation.

APEX E - Environmental ICP/AES Applications



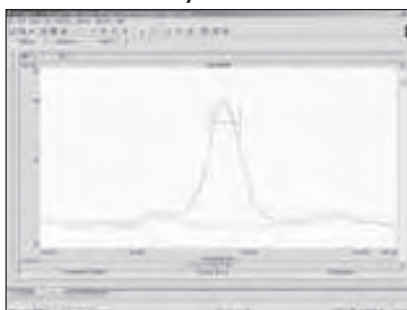
Today's requirements for ICP-AES EPA environmental analyses require unprecedented sensitivity, now you can meet and exceed these detection limits using your existing instrumentation! Introducing the Apex E, a fully-integrated high sensitivity inlet system optimized for the analysis of environmental samples on ICP-AES. The system incorporates CPI's revolutionary MicroFlow Nebulizer technology and combines it with a highly effective desolvation and stabilization unit.

Standard Cyclonic Chamber



Spectra shown above was collected on a Varian Vista ICP-AES with a standard cyclonic spray chamber inlet. As is shown at 10 ppb.

Apex E



Spectra shown above was collected on the same Varian Vista ICP-AES with the Apex E high sensitivity inlet system. As is shown at 10 ppb.

Inductively Coupled Plasma

ACM Performance Features:

- Chemical resistance similar to Teflon®
- Improved Desolvation Efficiency
- Reduced oxides and other interferences
- Easier optimization than macroporous membranes
- Sweep gas does not enter sample stream
- Resistant to clogging
- Fast rinse-out

Apex E Performance Features:

- Increases instrument sensitivity more than 8 times
- Excellent transport efficiency.
- Non-contaminating inlet; o-ring-free; polypropylene and glass sample path for maximum chemical resistance and low BECs.
- Installs on popular ICP-AES instruments in minutes.



Innovative Solutions
in Analytical Science and
Technology

1600 Taylor Boulevard
Santa Rosa, CA 95403

www.cpiintl.com
Tel: 707.545.7991
707.525.5788
800.878.1884

Welcome to CPI International's 2005 Standards Line

CPI International has a proven reputation for manufacturing certified reference materials of the highest quality. As Laboratory Director, I am committed to upholding that reputation. To reflect our pride and confidence in our products, CPI International has added the new "Peak Performance" logo to all of our standards.

Peak Performance[®] means that all of our standards are prepared from high-purity starting materials, sub-boiling distilled acids and 18-megohm de-ionized water. We use only Class A calibrated glassware and balances calibrated with Class F NIST-traceable weights. All of our solutions are bottled in pre-cleaned, MSPE Passport 100 bottles and secured with heat-shrink seals. The accuracy of the single-element line is guaranteed to $\pm 0.1\%$, and we have a $\pm 0.5\%$ guarantee of accuracy on all of our stock mixes and custom blends.

Our Peak Performance[®] commitment goes beyond product quality. It extends all the way into our customer service level that includes 1-day quoting, 7-day turn-around on custom blends and same day shipping on all stock solutions.

Along with the new Peak Performance[®] logo, this catalog also highlights the many new products CPI International has to offer. CPI International is the only standards manufacturer providing parts and supplies for AA, ICP, ICP-MS, GC and GC/MS. We are committed to being "full service" not only in our certified reference materials, but also in our ability to help you save time and money throughout the lab.

Please feel free to contact me if you ever have any questions or comments about our Peak Performance[®] products.

Sincerely,

Katie Ketyla
Laboratory Director

Inorganic Standards



Single-Element Standards	
1,000 µg/mL	76
10,000 µg/mL	77
US EPA 200.7	
Tuning and Plasma Solutions	78
Quality Control Standards	78
Laboratory Fortifying Solution	78
Calibration Standards	79
Interference Check Standards	79
US EPA Method 1310	79
US EPA 600/4-79-020	
Groundwater and Wastewater	80
Contract Lab Program (CLP)	
ICAL Standards	81
CLP Sample Spike Solutions	81
CLP Interference Check Standards	81
Instrument Check Standards	82
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CPI International offers single- and multi-element standards with the accuracy you demand. Single-element standards are guaranteed accurate to +0.3%, and are available in 100mL, 250mL or 500mL polyethylene Passport IP2 bottles. We also welcome all requests for custom blends. All CPI International standards carry an 18-month guarantee for accuracy, quality and shelf life.



All standards are prepared from high-purity starting materials, sub-boiling distilled acids and 18-megaohm de-ionized water. We use only class A volumetric glassware calibrated by NIST guidelines. Starting materials are weighed to 0.1-mg on analytical balances calibrated by NIST traceable Class F weights. The acids and de-ionized water are regularly tested by ICP-MS to ensure purity.

Each standard is packaged in an HDPE Passport IP2 bottle pre-leached and secured with a heat-shrink seal.

Every standard is certified gravimetrically and instrumentally against NIST SRM 3100 Series spectrometric solutions. A Certificate of Analysis reporting ICP-MS analysis for trace impurities and a Material Safety Data Sheet are shipped with every standard. CPI guarantees the accuracy of single-elements to ± 0.3% for 18 months from date of shipping.

Please call for pricing on custom single-element standards.

Single-Element Standards 1,000 µg/mL

Element	Source	Purity	Matrix	100 mL	250 mL
Aluminum	Al metal	99.999	2% HNO ₃	S4400-100011	4400-100011
Antimony	Sb metal	99.9999	4% HNO ₃ + 0.1% HF	S4400-100023	4400-100023
			40% HCl	S4400-100022	4400-100022
Arsenic	As metal	99.999+	2% HNO ₃	S4400-100031	4400-100031
	As ₂ O ₃ as As ⁺³	99.998	2% HCl	S4400-100036	4400-100036
	As ₂ O ₃ as As ⁺⁵	99.998	2% NaOH	S4400-100037	4400-100037
Barium	Ba ₂ CO ₃	99.999	2% HNO ₃	S4400-100041	4400-100041
Beryllium	Be ₄ O(C ₂ H ₃ O ₂) ₆	99.999	2% HNO ₃	S4400-100051	4400-100051
Bismuth	Bi metal	99.999	2% HNO ₃	S4400-100061	4400-100061
Boron	H ₃ BO ₃	99.999	H ₂ O	S4400-100074	4400-100074
Cadmium	Cd metal	99.999	2% HNO ₃	S4400-100081	4400-100081
Calcium	CaCO ₃	99.999	2% HNO ₃	S4400-100091	4400-100091
Carbon	C(oxalic acid)	99.99	H ₂ O	S4400-100091714	4400-100091714
Cerium	CeO ₂	99.995	2% HNO ₃	S4400-1000101	4400-1000101
Cesium	Cs ₂ CO ₃	99.994	2% HNO ₃	S4400-1000111	4400-1000111
Chromium	Cr metal	99.995	2% HNO ₃	S4400-1000121	4400-1000121
	Cr metal as Cr ⁺³	99.995	2% HCl	S4400-1000126	4400-1000126
	K ₂ Cr ₂ O ₇ as Cr ⁺⁶	99.999	H ₂ O	S4400-1000127	4400-1000127
Cobalt	Co metal	99.999	2% HNO ₃	S4400-1000131	4400-1000131
Copper	Cu metal	99.999	2% HNO ₃	S4400-1000141	4400-1000141
Dysprosium	Dy ₂ O ₃	99.99	2% HNO ₃	S4400-1000151	4400-1000151
Erbium	Er ₂ O ₃	99.99	2% HNO ₃	S4400-1000161	4400-1000161
Europium	Eu ₂ O ₃	99.99	2% HNO ₃	S4400-1000171	4400-1000171
Gadolinium	Gd ₂ O ₃	99.999	2% HNO ₃	S4400-1000181	4400-1000181
Gallium	Ga metal	99.999	2% HNO ₃	S4400-1000191	4400-1000191
Germanium	NH ₄ GeF ₆	99.998	2% HNO ₃	S4400-1000201	4400-1000201
Gold	Au metal	99.99	2% HCl	S4400-1000212	4400-1000212
Hafnium	Hf metal	99.9	2% HNO ₃ + 0.5% HF	S4400-1000223	4400-1000223
Holmium	Ho ₂ O ₃	99.99	2% HNO ₃	S4400-1000231	4400-1000231
Indium	In metal	99.999	2% HNO ₃	S4400-1000241	4400-1000241
Iridium	(NH ₄) ₃ IrCl ₆	99.99	10% HCl	S4400-1000252	4400-1000252
Iron	Fe metal	99.999	2% HNO ₃	S4400-1000261	4400-1000261
Lanthanum	La ₂ O ₃	99.999	2% HNO ₃	S4400-1000271	4400-1000271
Lead	Pb metal	99.999	2% HNO ₃	S4400-1000281	4400-1000281
Lithium	Li ₂ CO ₃	99.999	1% HNO ₃	S4400-1000291	4400-1000291
Lutetium	Lu ₂ O ₃	99.999	2% HNO ₃	S4400-1000301	4400-1000301
Magnesium	Mg metal	99.99	2% HNO ₃	S4400-1000311	4400-1000311
Manganese	Mn metal	99.99	2% HNO ₃	S4400-1000321	4400-1000321
Mercury	Hg metal	99.9999	2% HNO ₃	S4400-1000331	4400-1000331
Molybdenum	Mo metal	99.999	2% HNO ₃ + 0.1% HF	S4400-1000343	4400-1000343
		99.999	2% HCl	S4400-1000342	4400-1000342
Neodymium	Nd ₂ O ₃	99.99	2% HNO ₃	S4400-1000351	4400-1000351
Nickel	Ni metal	99.999	2% HNO ₃	S4400-1000361	4400-1000361
Niobium	Nb metal	99.99	2% HNO ₃ + 0.5% HF	S4400-1000373	4400-1000373
Osmium	(NH ₄) ₂ OsCl ₆	99.99	2% HCl	S4400-1000702	4400-1000702
Palladium	Pd metal	99.999	4% HNO ₃	S4400-1000381	4400-1000381
Phosphorous	NH ₄ H ₂ PO ₄	99.999	0.05% HNO ₃	S4400-1000391	4400-1000391
Platinum	Pt metal	99.999	5% HCl	S4400-1000402	4400-1000402
Potassium	KNO ₃	99.999	1% HNO ₃	S4400-1000411	4400-1000411
Praseodymium	Pr ₆ O ₁₁	99.99	2% HNO ₃	S4400-1000421	4400-1000421
Rhenium	Re metal	99.99	2% HNO ₃	S4400-1000431	4400-1000431
Rhodium	(NH ₄) ₃ RhCl ₆	99.99	10% HCl	S4400-1000442	4400-1000442
Rubidium	Rb ₂ CO ₃	99.975	2% HNO ₃	S4400-1000451	4400-1000451
Ruthenium	(NH ₄) ₂ RuCl ₆	99.99	10% HCl	S4400-1000462	4400-1000462
Samarium	Sm ₂ O ₃	99.99	2% HNO ₃	S4400-1000471	4400-1000471
Scandium	Sc ₂ O ₃	99.99	2% HNO ₃	S4400-1000481	4400-1000481
Selenium	Se metal	99.999	2% HNO ₃	S4400-1000491	4400-1000491
Silicon	(NH ₄) ₂ SiF ₆	99.99	H ₂ O	S4400-1000504F	4400-1000504F
Silver	Ag metal	99.99	2% HNO ₃	S4400-1000511	4400-1000511
Sodium	NaNO ₃	99.999	1% HNO ₃	S4400-1000521	4400-1000521
Strontium	SrCO ₃	99.999	2% HNO ₃	S4400-1000531	4400-1000531
Sulfur	H ₂ SO ₄	99.999	H ₂ O	S4400-1000544	4400-1000544
Tantalum	Ta metal	99.99+	2% HNO ₃ + 0.5% HF	S4400-1000553	4400-1000553
Tellurium	Te metal	99.999	2% HNO ₃ + 0.2% HF	S4400-1000563	4400-1000563
Terbium	Tb ₄ O ₇	99.99	2% HNO ₃	S4400-1000571	4400-1000571
Thallium	Tl metal	99.999	2% HNO ₃	S4400-1000581	4400-1000581
Thorium	ThO ₂	99.99	2% HNO ₃	S4400-1000591	4400-1000591
Thulium	Tm ₂ O ₃	99.995	2% HNO ₃	S4400-1000601	4400-1000601
Tin	Sn metal	99.999	2% HNO ₃ + 0.5% HF	S4400-1000613	4400-1000613
		99.999	40% HCl	S4400-1000612	4400-1000612
Titanium	Ti metal	99.99	2% HNO ₃ + 0.1% HF	S4400-1000623	4400-1000623
		99.99	20% HCl	S4400-1000622	4400-1000622
Tungsten	W metal	99.999	2% HNO ₃ + 1% HF	S4400-1000633	4400-1000633
Uranium	U ₃ O ₈	99.99	2% HNO ₃	S4400-1000641	4400-1000641
Vanadium	NH ₄ VO ₃	99.995	2% HNO ₃	S4400-1000651	4400-1000651
Ytterbium	Yb ₂ O ₃	99.99	2% HNO ₃	S4400-1000661	4400-1000661
Yttrium	Y ₂ O ₃	99.999	2% HNO ₃	S4400-1000671	4400-1000671
Zinc	Zn metal	99.999	2% HNO ₃	S4400-1000681	4400-1000681
Zirconium	ZrONO ₃	99.99	2% HNO ₃	S4400-1000691	4400-1000691



All Single-Element Standards ship with a Certificate of Analysis and Material Safety Data Sheet.

Single-Element Standards 10,000 µg/mL

Element	Source	Purity	Matrix	100 mL	250 mL
Aluminum	Al metal	99.999	4% HNO ₃	S4400-10M11	4400-10M11
Antimony	Sb metal	99.9999	4% HNO ₃ + 2% HF 50% HCl	S4400-10M23 S4400-10M22	4400-10M23 4400-10M22
Arsenic	As metal	99.999+	4% HNO ₃	S4400-10M31	4400-10M31
Barium	Ba ₂ CO ₃	99.999	4% HNO ₃	S4400-10M41	4400-10M41
Beryllium	Be ₄ O(C ₂ H ₃ O ₂) ₆	99.999	4% HNO ₃	S4400-10M51	4400-10M51
Bismuth	Bi metal	99.999	4% HNO ₃	S4400-10M61	4400-10M61
Boron	H ₃ BO ₃	99.999	H ₂ O	*S4400-5M74	*4400-5M74
Cadmium	Cd metal	99.999	4% HNO ₃	S4400-10M81	4400-10M81
Calcium	CaCO ₃	99.999	4% HNO ₃	S4400-10M91	4400-10M91
Carbon	C(oxalic acid)	99.99	H ₂ O	S4400-100091714	4400-100091714
Cerium	CeO ₂	99.995	4% HNO ₃	S4400-10M101	4400-10M101
Cesium	Cs ₂ CO ₃	99.994	1% HNO ₃	S4400-10M111	4400-10M111
Chromium	Cr metal	99.995	4% HNO ₃	S4400-10M121	4400-10M121
Cobalt	Co metal	99.999	4% HNO ₃	S4400-10M131	4400-10M131
Copper	Cu metal	99.999	4% HNO ₃	S4400-10M141	4400-10M141
Dysprosium	Dy ₂ O ₃	99.99	4% HNO ₃	S4400-10M151	4400-10M151
Erbium	Er ₂ O ₃	99.99	4% HNO ₃	S4400-10M161	4400-10M161
Europium	Eu ₂ O ₃	99.99	4% HNO ₃	S4400-10M171	4400-10M171
Gadolinium	Gd ₂ O ₃	99.999	4% HNO ₃	S4400-10M181	4400-10M181
Gallium	Ga metal	99.999	4% HNO ₃	S4400-10M191	4400-10M191
Germanium	NH ₄ Gef ₆	99.998	4% HNO ₃	S4400-10M201	4400-10M201
Gold	Au metal	99.99	10% HCl	S4400-10M212	4400-10M212
Hafnium	Hf metal	99.9	4% HNO ₃ + 2% HF	S4400-10M223	4400-10M223
Holmium	Ho ₂ O ₃	99.99	4% HNO ₃	S4400-10M231	4400-10M231
Indium	In metal	99.999	4% HNO ₃	S4400-10M241	4400-10M241
Iron	Fe metal	99.999	4% HNO ₃	S4400-10M261	4400-10M261
Lanthanum	La ₂ O ₃	99.999	4% HNO ₃	S4400-10M271	4400-10M271
Lead	Pb metal	99.999	4% HNO ₃	S4400-10M281	4400-10M281
Lithium	Li ₂ CO ₃	99.999	1% HNO ₃	S4400-10M291	4400-10M291
Lutetium	Lu ₂ O ₃	99.999	4% HNO ₃	S4400-10M301	4400-10M301
Magnesium	Mg metal	99.99	4% HNO ₃	S4400-10M311	4400-10M311
Manganese	Mn metal	99.99	4% HNO ₃	S4400-10M321	4400-10M321
Mercury	Hg metal	99.9999	4% HNO ₃	S4400-10M331	4400-10M331
Molybdenum	Mo metal	99.999	4% HNO ₃ + 2% HF 10% HCl	S4400-10M343 S4400-10M342	4400-10M343 4400-10M342
Neodymium	Nd ₂ O ₃	99.99	4% HNO ₃	S4400-10M351	4400-10M351
Nickel	Ni metal	99.999	4% HNO ₃	S4400-10M361	4400-10M361
Niobium	Nb metal	99.99	4% HNO ₃ + 1% HF	S4400-10M373	4400-10M373
Palladium	Pd metal	99.999	10% HNO ₃	S4400-10M381	4400-10M381
Phosphorous	NH ₄ H ₂ PO ₄	99.999	0.05% HNO ₃	S4400-10M391	4400-10M391
Platinum	Pt metal	99.999	10% HCl	S4400-10M402	4400-10M402
Potassium	KNO ₃	99.999	1% HNO ₃	S4400-10M411	4400-10M411
Praseodymium	Pr ₆ O ₁₁	99.99	4% HNO ₃	S4400-10M421	4400-10M421
Rhenium	Re metal	99.99	4% HNO ₃	S4400-10M431	4400-10M431
Rubidium	Rb ₂ CO ₃	99.975	2% HNO ₃	S4400-10M451	4400-10M451
Samarium	Sm ₂ O ₃	99.99	4% HNO ₃	S4400-10M471	4400-10M471
Scandium	Sc ₂ O ₃	99.99	4% HNO ₃	S4400-10M481	4400-10M481
Selenium	Se metal	99.999	4% HNO ₃	S4400-10M491	4400-10M491
Silicon	(NH ₄) ₂ SiF ₆	99.99	H ₂ O	S4400-10M504F	4400-10M504F
Silver	Ag metal	99.99	4% HNO ₃	S4400-10M511	4400-10M511
Sodium	NaNO ₃	99.999	1% HNO ₃	S4400-10M521	4400-10M521
Strontium	SrCO ₃	99.999	4% HNO ₃	S4400-10M531	4400-10M531
Sulfur	H ₂ SO ₄	99.999	H ₂ O	S4400-10M544	4400-10M544
Tantalum	Ta metal	99.99+	4% HNO ₃ + 2% HF	S4400-10M553	4400-10M553
Tellurium	Te metal	99.999	4% HNO ₃ + 2% HF	S4400-10M563	4400-10M563
Terbium	Tb ₄ O ₇	99.99	4% HNO ₃	S4400-10M571	4400-10M571
Thallium	Tl metal	99.999	4% HNO ₃	S4400-10M581	4400-10M581
Thorium	ThO ₂	99.99	4% HNO ₃	S4400-10M591	4400-10M591
Thulium	Tm ₂ O ₃	99.995	4% HNO ₃	S4400-10M601	4400-10M601
Tin	Sn metal	99.999	4% HNO ₃ + 2% HF 60% HCl	S4400-10M613 S4400-10M612	4400-10M613 4400-10M612
Titanium	Ti metal	99.99	4% HNO ₃ + 2% HF 40% HCl	S4400-10M623 S4400-10M622	4400-10M623 4400-10M622
Tungsten	W metal	99.999	4% HNO ₃ + 2% HF	S4400-10M633	4400-10M633
Uranium	U ₃ O ₈	99.99	4% HNO ₃	S4400-10M641	4400-10M641
Vanadium	NH ₄ VO ₃	99.995	4% HNO ₃	S4400-10M651	4400-10M651
				*S4400-5M651	*4400-5M651
Ytterbium	Yb ₂ O ₃	99.99	4% HNO ₃	S4400-10M661	4400-10M661
Yttrium	Y ₂ O ₃	99.999	4% HNO ₃	S4400-10M671	4400-10M671
Zinc	Zn metal	99.999	4% HNO ₃	S4400-10M681	4400-10M681
Zirconium	ZrONO ₃	99.99	4% HNO ₃	S4400-10M691	4400-10M691

10,000 µg/mL concentration



NOW AVAILABLE!

26 Element QC Standards

*Combined QC7 plus QC19
100mL 4400-012
500mL 4400-013*

These standards are used for the determination of metals by ICP as described in US EPA Method 200.7

ICP Multi-Element Standards

US EPA Method 200.7

Tuning and Plasma Solutions

Tuning Solution				Plasma Solution			
CPI P/N	Volume		CPI P/N	Volume			
4400-010114	100mL		4400-010116	100mL			
4400-010115	500mL		4400-010117	500mL			
µg/mL in 5% HNO ₃				µg/mL in 5% HNO ₃			
Cu	10	Pb	10	As	10	Se	10
				Pb	10	Tl	10

Quality Control Standards

7 Elements				7 Elements – Modified				19 Elements			
CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume	
4400-002	100mL		4400-010105	100mL		4400-005	100mL		4400-005	100mL	
4400-001	500mL		4400-010106	500mL		4400-004	500mL		4400-004	500mL	
µg/mL in 5% HNO ₃				µg/mL in 5% HNO ₃				µg/mL in 5% HNO ₃ + tr HF			
Al	100	Si	50	Al	100	Si	100	Sb	100	Mg	100
Ba	100	Ag	100	Ba	100	Ag	50	As	100	Mn	100
B	100	Na	100	B	100	Na	100	Be	100	Mo	100
K	1000			K	1000			Cd	100	Ni	100
								Ca	100	Se	100
								Cr	100	Tl	100
								Co	100	Ti	100
								Cu	100	V	100
								Fe	100	Zn	100
								Pb	100		

21 Elements							
CPI P/N	Volume		CPI P/N	Volume			
4400-010	100mL		4400-011	500mL			
µg/mL in 5% HNO ₃ + tr HF							
Sb	100	Cr	100	Pb	100	Se	100
As	100	Co	100	Mg	100	Sr	100
Be	100	Cu	100	Mn	100	Tl	100
Cd	100	Fe	100	Mo	100	Ti	100
Ca	100	Li	100	Ni	100	V	100
						Zn	100

QC Standard Set	
CPI P/N	2 bottles
4400-005	4400-002

Laboratory Fortifying Solution

Laboratory Fortifying Solution							
CPI P/N	Volume		CPI P/N	Volume			
4400-010118	100mL		4400-010119	500mL			
µg/mL in 5% HNO ₃ + tr HF							
Ag	2.5	Co	10	Mn	25	Sn	10
Al	25	Cr	25	Ni	25	Sr	25
As	25	Cu	25	P	50	Tl	25
B	25	Fe	25	Pb	25	V	10
Ba	25	Hg*	5	Sb	25	Zn	25
Be	5	Li	25	Se	25	*Shipped Separately	
Cd	10	Mo	10	Si	25		

ICP Multi-Element Standards

US EPA Method 200.7

Calibration Standards

Standard I			Standard II			Standard III					
CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume				
4400-MXSTD1-100	100mL		4400-MXSTD2-100	100mL		4400-MXSTD3-100	100mL				
4400-MXSTD1-500	500mL		4400-MXSTD2-500	500mL		4400-MXSTD3-500	500mL				
µg/mL in 2% HNO ₃			µg/mL in 2% HNO ₃			µg/mL in 2% HNO ₃ + tr HF					
Be	50	Se	200	Ba	100	V	100	As	500	Mo	100
Mn	100	Pb	500	Fe	10,000	Cu	100	Si	100		
Cd	150	Zn	150	Co	100						

Standard IV			Standard V			Calibration Standards Set	
CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume
4400-MXSTD4-100	100mL		4400-MXSTD5-100	100mL		4400-MXSTD-SET	5 Bottles
4400-MXSTD4-500	500mL		4400-MXSTD5-500	500mL		4400-MXSTD1-100	100mL
µg/mL in 2% HNO ₃			µg/mL in 2% HNO ₃ + tr HF			4400-MXSTD2-100	100mL
Al	200	K	400	Sb	200	Tl	200
Ni	20	Cr	20	Ag	50	Mg	1000
Ca	1000	Na	200	B	100		
						4400-MXSTD3-100	100mL
						4400-MXSTD4-100	100mL
						4400-MXSTD5-100	100mL

Interference Check Standards

Standard 1			Standard 3			Standard 5				
CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume			
4400-INTR1-100	100mL		4400-INTR3-100	100mL		4400-INTR5-100	100mL			
4400-INTR1-500	500mL		4400-INTR3-500	500mL		4400-INTR5-500	500mL			
µg/mL in 2% HNO ₃ + 0.1% HF			µg/mL in 2% HNO ₃ + 0.5% HF			µg/mL in 5% HNO ₃				
Sb	1000		B	500	Mo	300	Al	1200	Na	1000
			Si	230	Ti	1000	Mg	3000	Fe	5000
							Ca	6000		

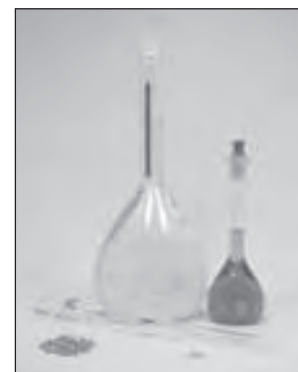
Standard 18					Calibration Standards Set		
CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume
4400-INTR18-100	100mL		4400-INTR18-500	500mL		4400-INTR-SET	4 Bottles
µg/mL in 2% HNO ₃					4400-INTR18-100		
As	1000	K	20,000	Co	300	Zn	300
Hg	50	Cd	300	Tl	1000	Mn	200
Ba	300	Se	500	Cu	300	*Shipped Separately	
Ni	300	Cr	300	V	300		
Be	100	Ag*	300	Pb	1000		

US EPA Method 1310

Drinking Water Pollutant Standards

Primary Drinking Water Metals			Secondary Drinking Water Metals			Drinking Water Set	
CPI P/N	Volume		CPI P/N	Volume		CPI P/N	Volume
4400-EP8-100	100mL		4400-EP4-100	100mL		4400-DW-SET	2 Bottles
4400-EP8-500	500mL		4400-EP4-500	500mL		4400-EP8-100	
µg/mL in 2% HNO ₃			µg/mL in 2% HNO ₃			4400-EP4-100	
As	10	Pb	10	Cu	100	Mn	5
Ba	100	Se	5	Fe	30	Zn	500
Cd	5	Ag	10				
Cr	10	Hg	10				

PEAK PERFORMANCE™
CERTIFIED REFERENCE MATERIALS



Drinking Water Standards

These mixes are for the determination of drinking water contamination levels as described in US EPA SW-846, Method 1310 and US National Primary Drinking Water Regulations 40 CFR Part 141.



Groundwater & Wastewater

These check standards are prepared for the determination of metals in water as detailed in US EPA methods manual 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes"; Trace metals 21I, 21II and 21III methods.

ICP Multi-Element Standards

US EPA Methods 600/4-79-020

Groundwater and Wastewater Control Check Standards

Trace Metals I				Trace Metals II				Trace Metals III			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-WP15-100		100mL		4400-WP3-100		100mL		4400-MN6-100		100mL	
4400-WP15-500		500mL		4400-WP3-500		500mL		4400-MN6-500		500mL	
$\mu\text{g/mL in } 5\% \text{ HNO}_3$				$\mu\text{g/mL in } 2\% \text{ HNO}_3 + \text{tr HF}$				$\mu\text{g/mL in } 2\% \text{ HNO}_3 + \text{tr HF}$			
Al	500	Pb	100	Sb	20	Tl	20	Ba	500	Mo	500
As	100	Mn	100	Ag	10			Ca	500	K	100
Be	100	Hg	5	Trace Metals Set CPI P/N 4400-TM-SET 3 bottles 4400-WP15-100 4400-WP3-100 4400-MN6-100				Mg	100	Na	500
Cd	25	Ni	100								
Cr	100	Se	25								
Co	100	V	250								
Cu	100	Zn	100								
Fe	100										

Alternate Metals Standard II

CPI P/N		Volume	
4400-010122		100mL	
$\mu\text{g/mL in } 2\% \text{ HNO}_3$			
Ca	500	Mg	100
K	100	Na	500

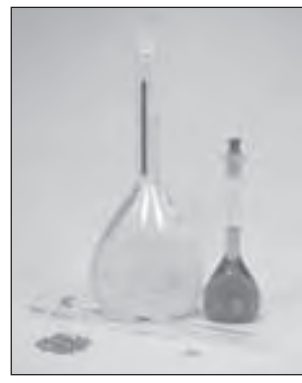
Contract Laboratory Program (CLP)

Contract Lab Program

These standards are prepared to conform to US EPA SOW.ILM04.0 inorganic target analyte list (TAL), analytical methods and QC/QA requirements.

Standard I				Standard II				Standard III			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-ICAL1-100		100mL		4400-ICAL2-100		100mL		4400-ICAL3-100		100mL	
$\mu\text{g/mL in } 5\% \text{ HNO}_3$				$\mu\text{g/mL in } 5\% \text{ HNO}_3$				$\mu\text{g/mL in } 5\% \text{ HNO}_3$			
Ca	5000	K	5000	Ag	100	Ni	400	Al	2000	Cu	250
Mg	5000	Na	5000	Cr	100	Zn	200	Ba	2000	Fe	1000
				Mn	150			Be	50	V	500
								Co	500		

Standard IV				Standard VI			
CPI P/N		Volume		CPI P/N		Volume	
4400-ICAL4-100		100mL		4400-ICAL6-100		100mL	
$\mu\text{g/mL in } 5\% \text{ HNO}_3$				$\mu\text{g/mL in } 2\% \text{ HNO}_3$			
As	100	Se	50	Hg	100		
Cd	50	Tl	100				
Pb	50						



CLP Interference Check Standards
Used to determine the interferences due to inter-element and background correction factors before and after the analysis.

Convenience, Corrosion Resistance, Complete Control!



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See page 18 for more information.

ICP Multi-Element Standards

CLP Sample Spike Solutions

Sample Spike				Verification Standard				Soil Spike			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-SPIKE1-100		100mL		4400-ICV1		500mL		4400-010088		100mL	
µg/mL in 5% HNO₃ + tr HF				µg/mL in 5% HNO₃ + tr HF				µg/mL in 2% HNO₃ + tr HF			
Al	200	Fe	100	Al	200	Pb	5	Sb	100	Mn	100
Sb	50	Pb	50	Sb	60	Mg	5,000	As	400	Ni	100
As	200	Mn	50	As	10	Mn	15	Ba	400	Pb	100
Ba	200	Ni	50	Ba	200	Ni	40	Be	10	Se	400
Be	5	Se	200	Be	5	K	5,000	Cd	10	Ag	10
Cd	5	Ag	5	Cd	5	Se	5	Cr	40	Tl	400
Cr	20	Tl	200	Ca	5,000	Ag	10	Co	100	V	100
Co	50	V	50	Cr	10	Na	5,000	Cu	50	Zn	100
Cu	25	Zn	50	Co	50	Tl	10				
				Cu	25	V	50				
				Fe	100	Zn	20				

Interference Check Standards

Interferents A				Analytes B				CRDL Standard			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-INTA1-500		500mL		4400-INTB1-100		100mL		4400-CRDL1-100		100mL	
µg/mL in 5% HNO₃				µg/mL in 5% HNO₃				µg/mL in 5% HNO₃ + tr HF			
Al	5000	Fe	2000	Ag	100	Cu	50	Sb	120	Mn	30
Ca	5000	Mg	5000	Ba	50	Mn	50	As	20	Ni	80
				Be	50	Ni	100	Be	10	Se	10
				Cd	100	Pb	100	Cd	10	Ag	20
				Co	50	V	50	Cr	20	Tl	20
				Cr	50	Zn	100	Co	100	V	100
								Cu	50	Zn	40
								Pb	6		

Alternate Interferents A				Alternate Analytes B			
CPI P/N		Volume		CPI P/N		Volume	
4400-INTA2-500		500mL		4400-INTB2-100		100mL	
µg/mL in 5% HNO₃ + tr HF				µg/mL in 5% HNO₃ + tr HF			
Cr	1000	Ni	1000	Al	100	Mg	10
Cu	1000	Ti	1000	Sb	100	Mo	100
Mn	1000	V	1000	As	100	Se	100
				B	100	Si	10
				Ca	10	Na	100
				Fe	10	Tl	100

CLP 13 Standard Set

CLP Set	
CPI P/N	13 Bottles
4400-ICAL1-100	4400-SPIKE1-100
4400-ICAL2-100	4400-CRDL1-100
4400-ICAL3-100	4400-INTA1-500
4400-ICAL4-100	4400-INTB1-100
4400-ICAL5-100	4400-INTA2-500
4400-ICAL6-100	4400-INTB2-100
4400-ICV1	



**Convenience, Corrosion
Resistance, Complete Control!**



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*See page 18 for more
information.*

Wavecal

**These standards are used
to center the analyte peak
in the instrument window
prior to analysis.**

NEW!

**Specialized mixes
for PerkinElmer®
Optima® 3000 ICPs.**

ICP Multi-Element Standards

Instrument Check Standards

Standard I				Standard II				Standard III			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-CALMX1-100		100mL		4400-CALMX2-100		100mL		4400-CALMX3-100		100mL	
µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃ + tr HF			
Al	10	Ni	10	Ba	50	Ni	20	As	20	P	100
Ba	1	P	100	Be	20	Sc	20	La	20	K	100
Be	1	Sc	1	La	20	Zn	20	Li	20	Sc	20
B	10	Zn	10	Mn	20			Mn	20	Na	20
Ca	1							Mo	20	S	100
								Ni	20		

Standard IV				Standard VII			
CPI P/N		Volume		CPI P/N		Volume	
4400-CALMX4-100		100mL		4400-CALMX7-100		100mL	
µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃			
Al	10	Ni	10	Al	100	Mg	100
As	10	P	10	As	100	Mn	100
Ba	1	K	50	Cd	100	Ni	100
Cu	10	Sc	10	Cr	100	K	100
Pb	10	Na	10	Co	100	Na	100
Mn	10	Zn	10	Cu	100	Zn	100
				Fe	100	Y	600
				Pb	100		

Standard VIII			
CPI P/N		Volume	
4400-CALMX8-100		100mL	
µg/mL in 2% HNO ₃			
Al	50	Pb	50
As	50	P	50
Cr	50	K	50
Co	50	Na	50
Cu	50		

Wavelength Calibration Standard

Wavecal 1 for PE® 40, 400, 1000, 2000				Wavecal 2 for PE® 6000, 6500 (XR)							
CPI P/N		Volume		CPI P/N		Volume					
4400-010130		100mL		4400-010128		100mL					
µg/mL in 2% HCl				µg/mL in 2% HCl							
As	20	Mn	20	P	100	Ba	50	Mn	20	Sc	20
K	100	Mo	20	S	100	Be	20	Ni	20	Zn	20
La	20	Na	20	Sc	20	La	20				
Li	20	Ni	20								

Wavecal 3 for Optima 3000® VIS				Wavecal 4 for Optima 3000® UV							
CPI P/N		Volume		CPI P/N		Volume					
4400-010124		100mL		4400-010126		100mL					
µg/mL in 2% HNO ₃				µg/mL in 2% HCl							
Ba	1	La	10	Mn	10	As	20	Mn	20	P	100
Ca	1	Li	10	Na	10	K	100	Mo	20	S	100
K	50			Sr	10	La	20	Na	20	Sc	20
						Li	20	Ni	20		

Optima 3000® Multi-element Standard				Optima 3000® Low UV Standard							
CPI P/N		Volume		CPI P/N		Volume					
4400-010200		100mL		4400-010202		100mL					
µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃							
As	50	Mg	1	K	50	Al	10	P	10	S	10
Ba	1	Mn	10	Zn	10						
La	10	Ni	10	Sr	10						



Initial Calibration Verification (ICV)
 These standards are used prior to the actual analysis to test the instrumental calibration curves at each wavelength to be used in the following analysis.

Continuing Calibration Verification (CCV)
 These standards are used to monitor drifting of the calibration curve during the analysis; usually administered between samples and at the end of the analysis.

ICP Kits
 These kits are prepared to provide the analyst with a supply of single element spectrometric solutions. All standards are bottled in Passport IP2 bottles and ship with a comprehensive Certificate of Analysis and Material Safety Data Sheet.

ICP Multi-Element Standards

Initial Calibration Verification Standards

Standard 1				Standard 2			
CPI P/N	Volume			CPI P/N	Volume		
4400-010094	500mL			4400-010095	100mL		
				4400-010096	500mL		
µg/mL in 2% HNO ₃ + tr HF				µg/mL in 15% HCl			
Al	100	Cu	100	Se	200	Sb	100
As	100	Fe	100	Si*	100	Sn	100
Ba	50	Pb	100	Na*	162	Ti	100
Be	50	Li	100	S*	200		
Bi	100	Mg	100	Sr	100		
B	100	Mn	50	Tl	100		
Cd	50	Mo	100	V	50		
Ca	100	Ni	100	Zn	50		
Cr	50	P	200				
Co	50	K	200	*Shipped Separately			

Continuing Calibration Verification Standards

Standard 1				Standard 2			
CPI P/N	Volume			CPI P/N	Volume		
4400-010099	100mL			4400-010101	100mL		
4400-010100	500mL			4400-010102	500mL		
µg/mL in 2% HNO ₃ + tr HF				µg/mL in 15% HCl			
Al	200	Cu	200	Se	200	Sb	200
As	200	Fe	200	Si*	500	Sn	200
Ba	100	Pb	200	Na*	810	Ti	200
Be	100	Li	200	S*	500		
Bi	200	Mg	200	Sr	200		
B	200	Mn	100	Tl	200		
Cd	100	Mo	200	V	100		
Ca	200	Ni	200	Zn	100		
Cr	50	P	500				
Co	100	K	500	*Shipped Separately			

ICP Kit A				Kit B				Kit D			
CPI P/N	Volume			CPI P/N	Volume			CPI P/N	Volume		
4400-010082	100mL ea.			4400-010083	100mL ea.			4400-010085	100mL ea.		
µg/mL in HNO ₃ / HNO ₃ + tr HF				µg/mL in HNO ₃ / HNO ₃ + tr HF				µg/mL in HNO ₃			
Al	1000	Mn	1000	Sb	1000	Sn	1000	Ce	1000	Nd	1000
As	1000	Hg	1000	Hf	1000	Te	1000	Dy	1000	Pr	1000
Ba	1000	Ni	1000	Mo	1000	W	1000	Er	1000	Sm	1000
Be	1000	P	1000	Nb	1000	Zr	1000	Eu	1000	Sc	1000
Bi	1000	K	1000	Ta	1000			Gd	1000	Tb	1000
B	1000	Re	1000					Ho	1000	Tm	1000
Cd	1000	Rb	1000					La	1000	Yb	1000
Ca	1000	Se	1000					Lu	1000	Y	1000
Cs	1000	Si	1000								
Cr	1000	Ag	1000								
Co	1000	Na	1000								
Cu	1000	Sr	1000								
Ga	1000	S	1000								
Ge	1000	Tl	1000								
In	1000	Th	1000								
Fe	1000	Ti	1000								
Pb	1000	U	1000								
Li	1000	V	1000								
Mg	1000	Zn	1000								

Kit C			
CPI P/N	Volume		
4400-010084	100mL		
µg/mL in HCl			
Au	1000	Pt	1000
Ir	1000	Rh	1000
Os	1000	Ru	1000
Pd	1000		

Kit A-E			
CPI P/N	Volume		
4400-010087	100mL ea.		



200.8

These standards are used for the determination of metals in US EPA Method 200.8, "Methods for the Determination of Metals in Environmental Samples Supplement 1." All standards are bottled in Passport IP2 bottles and ship with a comprehensive Certificate of Analysis and Material Safety Data Sheet.

CPI also offers a complete selection of ICP-MS torches, nebulizers and corrosion (HF) resistant sample introduction components

ICP-MS Multi-Element Standards

US EPA Method 200.8

Standard A - rev. 5.4				Standard A - rev. 4.4				Standard B			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-010036		100mL		4400-010037		100mL		4400-010038		100mL	
µg/mL in 1% HNO ₃ + tr HF				µg/mL in 1% HNO ₃ + tr HF				µg/mL in 1% HNO ₃			
Al	10	Ni	10	Al	10	Ni	10	Ag	10	Ba	10
As	10	Pb	10	As	10	Pb	10				
Be	10	Sb	10	Be	10	Sb	10				
Cd	10	Se	50	Cd	10	Se	10				
Co	10	Th	10	Co	10	Th	10				
Cr	10	Tl	10	Cr	10	Tl	10				
Cu	10	U	10	Cu	10	U	10				
Mn	10	V	10	Mn	10	V	10				
Mo	10	Zn	10	Mo	10	Zn	10				

Internal Standard				Tuning Solution			
CPI P/N		Volume		CPI P/N		Volume	
4400-010039		100mL		4400-010040		100mL	
µg/mL in 1% HNO ₃				µg/mL in 1% HNO ₃			
⁴⁵ Sc	10	¹⁵⁹ Tb	10	Be	10	Mg	10
⁸⁹ Y	10			Co	10	Pb	10
²⁰⁹ Bi	10			In	10		
¹¹⁵ In	10						

US EPA Method 6020

Soil Spike				QC/ICV Solution				Water Spike			
CPI P/N		Volume		CPI P/N		Volume		CPI P/N		Volume	
4400-010044		100mL		4400-010045		100mL		4400-010043		100mL	
µg/mL in 2% HNO ₃ + tr HF				µg/mL in 2% HNO ₃ + tr HF				µg/mL in 2% HNO ₃ + tr HF			
Ag	10	Ni	25	Ag	10	Cu	10	Ag	5	Mn	20
Ba	50	Pb	20	Al	10	Mn	10	As	10	Ni	20
Be	5	Sb	20	As	10	Ni	10	Ba	50	Pb	10
Cd	10	Se	5	Ba	10	Pb	10	Be	5	Sb	20
Co	20	Tl	5	Be	10	Sb	10	Cd	5	Se	5
Cr	50	V	30	Cd	10	Tl	10	Co	20	Tl	5
Cu	50	Zn	50	Co	10	Zn	10	Cr	20	V	20
As	10			Cr	10			Cu	20	Zn	50
								Fe	100		

Internal Standard				Tuning Solution			
CPI P/N		Volume		CPI P/N		Volume	
4400-010041		100mL		4400-010042		100mL	
µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃			
⁶ Li	10	¹⁵⁹ Tb	10	Co	10	In	10
⁴⁵ Sc	10	¹⁶⁵ Ho	10	Li	10	Tl	10
²⁰⁹ Bi	10	⁸⁹ Y	10				
¹¹⁵ In	10						

ICP-MS Multi-Element Standards

ICP-MS Calibration Standard			
CPI P/N		Volume	
4400-ICP-MSCS		250mL	
µg/mL in 5% HNO ₃ + tr HF			
Al	10	Mn	10
As	10	Mo	10
Ag	10	Na	10
Ba	10	Ni	10
Be	10	Pb	10
B	10	Sb	10
Ca	10	Sc	10
Co	10	Se	10
Cd	10	Sr	10
Cr	10	Th	10
Cu	10	Tl	10
Eu	10	U	10
Ho	10	V	10
La	10	Yb	10
Li	10	Zn	10
Mg	10		

ICP-MS Interference Check Solutions					
CPI P/N		Volume			
4400-ICP-MS-ICS		100mL			
µg/mL in 2% HNO ₃ + tr HF					
Solution A			Solution B		
Al	500.0	Ag	0.10	Mg	500.00
C	1000.0	Al	500.00	Mo	10.00
Ca	500.0	As	0.10	Mn	0.10
Cl	3600.0	C	1000.00	Na	500.00
Fe	500.0	Ca	500.00	Ni	0.20
K	500.0	Cd	0.05	P	500.00
Mg	500.0	Cl	3600.00	Se	0.10
Mo	10.0	Co	0.20	S	500.00
Na	500.0	Cr	0.10	Ti	10.00
P	500.0	Cu	0.10	V	0.20
S	500.0	Fe	500.00	Zn	0.10
Ti	10.0	K	500.00		

Calibration Standard			
CPI P/N		Volume	
4400-ICPMS-250		250mL	
µg/mL in 2% HNO ₃ + tr HF			
Be	10	Pb	10
Bi	10	Mg	10
Ce	10	Ni	10
Co	10	U	10
In	10		

Standard I			
CPI P/N		Volume	
4400-ICPMS1		250mL	
µg/mL in 5% HNO ₃			
Ce	10	Pr	10
Dy	10	Sm	10
Er	10	Sc	10
Eu	10	Tb	10
Gd	10	Th	10
Ho	10	Tm	10
La	10	Yb	10
Lu	10	Y	10
Nd	10		

Standard III			
CPI P/N		Volume	
4400-ICPMS3		250mL	
µg/mL in 10% HCl			
Au	10	Rh	10
Hf	10	Ru	10
Ir	10	Sb	10
Pd	10	Sn	10
Pt	10	Te	10

Standard IV			
CPI P/N		Volume	
4400-010027		250mL	
µg/mL in 5% HNO ₃ + tr HF			
B	10	S	10
Ge	10	Si	10
Mo	10	Ta	10
Nb	10	Ti	10
P	10	W	10
Re	10	Zr	10

Internal Standard			
CPI P/N		Volume	
4400-010034		100mL	
µg/mL in 1% HNO ₃			
⁶ Li	100	⁸⁹ Y	100
⁴⁵ Sc	100	¹¹⁵ In	100
¹⁵⁹ Tb	100	²⁰⁹ Bi	100

Tuning Solution for HP 4500®			
CPI P/N		Volume	
4400-010035		100mL	
µg/mL in 5% HNO ₃			
Ce	10	Tl	10
Li	10	Y	10



Convenience, Corrosion Resistance, Complete Control!



Get it all in the ModBlock!

See page 18 for more information.



ICP-MS Kits

These kits are prepared to provide the analyst with a supply of single element spectrometric solutions. All standards are bottled in Passport IP2 bottles and ship with a comprehensive Certificate of Analysis and Material Safety Data Sheet.

ICP-MS Single-Element Kits

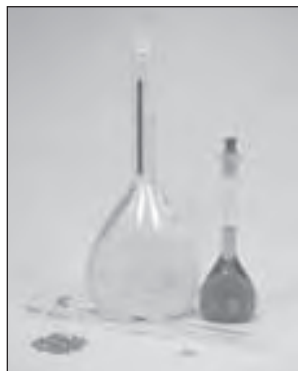
ICP-MS Kits					
Kit A		Kit B		Kit C	
CPI P/N	Volume	CPI P/N	Volume	CPI P/N	Volume
4400-010028	100mL ea.	4400-010029	100mL ea.	4400-010030	100mL ea.
µg/mL in HNO ₃ / HNO ₃ + HF		µg/mL in HNO ₃ / HNO ₃ + HF		µg/mL in HCl	
Al 10	Mn 10	Sb 10	Sn 10	Au 10	Pt 10
As 10	Hg 10	Hf 10	Te 10	Ir 10	Rh 10
Ba 10	Ni 10	Mo 10	W 10	Os 10	Ru 10
Be 10	P 10	Nb 10	Zr 10	Pd 10	
Bi 10	K 10	Ta 10			
B 10	Re 10	Kit D		Kit E	
Cd 10	Rb 10	CPI P/N	Volume	CPI P/N	Volume
Ca 10	Se 10	4400-010031	100mL ea.	4400-010032	100mL ea.
Cs 10	Si 10	µg/mL in HNO ₃		µg/mL in H ₂ O	
Cr 10	Ag 10	Ce 10	Nd 10	Bromide 10	Fluoride 10
Co 10	Na 10	Dy 10	Pr 10	Chloride- 10	Iodide 10
Cu 10	Sr 10	Er 10	Sm 10		
Ga 10	S 10	Eu 10	Sc 10	Kit A-E	
Ge 10	Tl 10	Gd 10	Tb 10	CPI P/N	Volume
In 10	Th 10	Ho 10	Tm 10	4400-010033	100mL ea.
Fe 10	Ti 10	La 10	Yb 10		
Pb 10	U 10	Lu 10	Y 10		
Li 10	V 10				
Mg 10	Zn 10				

Graphite Furnace Atomic Absorption (GFAA)

TCLP Standard				TCLP - 3 Analytes				TCLP - 4 Analytes			
CPI P/N	Volume			CPI P/N	Volume			CPI P/N	Volume		
4400-TCLP-100	100mL			4400-010091	100mL			4400-010089	100mL		
4400-TCLP-500	500mL							4400-010090	500mL		
µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃				µg/mL in 2% HNO ₃			
As	25	Pb	25	As	25	Se	5	Ba	500	Cr	25
Ba	500	Se	5	Pb	25			Cd	5	Ag	25
Cd	5	Ag	25								
Cr	25	Hg*	20								

*Shipped Separately

Calibration Standard				Initial Calibration Verification			
CPI P/N	Volume			CPI P/N	Volume		
4400-010107	100mL			4400-010109	100mL		
µg/mL in 2% HNO ₃ + tr HF				µg/mL in 2% HNO ₃ + tr HF			
As	20	Pb	10	Se	15	As	10
Cd	15	Sb	50	Tl	20	Pb	5
						Sb	25
						Tl	10
Spike Standard				Mercury Standard			
CPI P/N	Volume			CPI P/N	Volume		
4400-010111	100mL			4400-010113	100mL		
µg/mL in 2% HNO ₃ + tr HF				µg/mL in 2% HNO ₃			
As	40	Pb	20	Se	10	Hg	100
Cd	5	Sb	100	Tl	50		





Try our Pre-Mixed Pd & Mg(NO₃)₂ Modifier (CPI P/N 4095-29) and our Mg(NO₃)₂ Modifier specially prepared for use in PE® 4100 transverse furnaces (THGA) (CPI P/N 4095-31).

Ionization Buffers
CPI is proud to introduce its new line of Ionization Buffers. These solutions are used to suppress ionization interference in flame emission and flame absorption analysis. Call for a quote on custom Ionization Buffers.

GFAA

IVC Standard						IVC Spike					
CPI P/N		Volume				CPI P/N		Volume			
4400-010046		250mL				4400-GFAA-SPIKE		250mL			
µg/mL in 2% HNO₃						µg/mL in 2% HNO₃					
As	2.0	Cr	0.4	Se	2.0	As	4.0	Cr	2.0	Se	5.0
Cd	0.4	Pb	2.0	Ag	0.4	Cd	1.0	Pb	4.0	Ag	1.0
Tl	2.0					Tl	4.0				

Matrix Modifiers

To prevent analyte loss in the ashing process, use a matrix modifier to convert the analyte to a less volatile form. Save time and improve analytical performance with CPI modifiers. Our pre-mixed matrix modifiers offer both convenience and consistency from analysis to analysis.

Modifiers, Concentrated	Volume	CPI P/N	Replaces PE®/P/N
1% Palladium	100mL	4095-10	B019-0635
1% Magnesium Nitrate	100mL	4095-12	B019-0634
1% Nickel	100mL	4095-14	n/a
1% NH ₄ H ₂ PO ₄	100mL	4095-16	N930-3445
5% Nickel Nitrate	100mL	4095-34	n/a
2% Calcium Nitrate	100mL	4095-35	n/a
5% Lanthanum Nitrate	100mL	4095-36	n/a
2% Ammonium Nitrate	100mL	4095-37	n/a
3000µg/mL Pd & 2000 µg/mL Mg(NO ₃) ₂	250mL	4095-38	n/a
Modifiers, Pre-mixed (Per 20µL aliquots, for HGA® Furnaces)			
0.03mg Pd & 0.02mg Mg(NO ₃) ₂	250mL	4095-29	n/a
0.015mg Pd & 0.01mg Mg(NO ₃) ₂	250mL	4095-20	n/a
0.05mg Mg(NO ₃) ₂	250mL	4095-21	n/a
0.006mg Mg(NO ₃) ₂	250mL	4095-25	n/a
0.02mg Ni,	250mL	4095-26	n/a
0.2mg NH ₄ H ₂ PO ₄ & 0.01mg Mg(NO ₃) ₂	250mL	4095-28	n/a
Modifiers, Pre-mixed (Per 5µL aliquots)			
0.015mg Pd & 0.02mg Mg(NO ₃) ₂	100mL	4095-40	n/a
0.2mg NH ₄ H ₂ PO ₄ & 0.01mg Mg(NO ₃) ₂	250mL	4095-41	n/a
Modifiers, Pre-mixed (Per 5µL aliquots, for THGA® Furnaces)			
0.005mg Pd & 0.003mg Mg(NO ₃) ₂	250mL	4095-30	n/a
0.015mg Mg(NO ₃) ₂	250mL	4095-31	n/a
0.05mg NH ₄ H ₂ PO ₄ & 0.003mg Mg(NO ₃) ₂	250mL	4095-32	n/a

Ionization Buffers

Description	Source	Matrix	Volume	CPI P/N
1% Potassium	KCl	1% HCl	500mL	4400-010132
5% Potassium	KCl	1% HCl	500mL	4400-010133
1% Potassium	KNO3	1% HNO3	500mL	4400-010134
5% Potassium	KNO3	1% HNO3	500mL	4400-010135
1% Cesium	CsCl	1% HCl	500mL	4400-010136
5% Cesium	CsCl	1% HCl	500mL	4400-010137
1% Cesium	Cs2CO3	1% HNO3	500mL	4400-010138
5% Cesium	Cs2CO3	1% HNO3	500mL	4400-010139
1% Sodium	NaCl	1% HCl	500mL	4400-010140
5% Sodium	NaCl	1% HCl	500mL	4400-010141
1% Sodium	NaNO3	1% HNO3	500mL	4400-010142
5% Sodium	NaNO3	1% HNO3	500mL	4400-010143
1% Lithium	LiCl	1% HCl	500mL	4400-010144
5% Lithium	LiCl	1% HCl	500mL	4400-010145
1% Lithium	Li2CO3	1% HNO3	500mL	4400-010146
5% Lithium	Li2CO3	1% HNO3	500mL	4400-010147

Releasing Agents

Description	Source	Matrix	Volume	CPI P/N
1% Lanthanum	La2O3	1% HCl	500mL	4400-010152
1% Lanthanum	La2O3	1% HNO3	500mL	4400-010153
1% Strontium	SrCO3	2% HCl	500mL	4400-010154
1% Strontium	SrCO3	2% HNO3	500mL	4400-010155



Atomic Absorption Single-Element Standards

CPI International AA Standards are provided in 1,000 µg/mL concentrations in 500 mL volumes. All our AA standards are produced in a controlled environment using high quality starting materials and the utmost care in handling. Each standard is verified instrumentally and gravimetrically and comes with a Certificate of Analysis and MSDS. All are guaranteed for 18-months from the date of shipping.

AA Single-Element Standards - 1,000µg/mL, 500mL

Element	Source/Matrix	CPI P/N	Element	Source/Matrix	CPI P/N
Al	Al Metal/HCl	4095-100012	Mn	Mn Metal/HNO ₃	4095-1000321
Sb	SbCl ₃ /HCl	4095-100022	Hg	Hg Metal/ HNO ₃	4095-1000331
As	As ₂ O ₃ /HCl	4095-100032	Mo	Mo Metal/HCl	4095-1000342
Ba	BaCl ₂ ·2H ₂ O/HCl	4095-100042	Ni	Ni(NO ₃) ₂ ·6H ₂ O/ HNO ₃	4095-1000361
Bi	Bi Metal/HNO ₃	4095-100061	K	KCl/HCl	4095-1000412
B	H ₃ BO ₃ /H ₂ O	4095-100074	Se	Se Metal/HNO ₃	4095-1000491
Cd	Cd Metal/HNO ₃	4095-100081	Si	(NH ₄) ₂ SiF ₆ /H ₂ O	4095-1000504F
Ca	Ca ₂ CO ₃ /HNO ₃	4095-100091	Ag	AgNO ₃ /HNO ₃	4095-1000511
Cs	Cs ₂ CO ₃ /HNO ₃	4095-1000111	Na	NaCl/HCl	4095-1000522
Cr	Cr Metal/HNO ₃	4095-1000121	Sr	SrCO ₃ /HNO ₃	4095-1000531
Co	Co Metal/HNO ₃	4095-1000131	Tl	TlNO ₃ /HNO ₃	4095-1000581
Cu	Cu Metal/HNO ₃	4095-1000141	Sn	Sn Metal/HCl	4095-1000612
Fe	FeCl ₃ /HCl	4095-1000262	Ti	Ti Metal/HCl	4095-1000622
La	La ₂ O ₃ / HNO ₃	4095-1000271	W	Na ₂ WO ₄ ·2H ₂ O/H ₂ O	4095-1000634
Pb	Pb(NO ₃) ₂ /HNO ₃	4095-1000281	V	V ₂ O ₅ /HCl	4095-1000652
Li	Li ₂ CO ₃ /HNO ₃	4095-1000291	Zn	Zn Metal/ HNO ₃	4095-1000681
Mg	Mg Metal/HNO ₃	4095-1000311	Zr	ZrO(NO ₃) ₂ ·2H ₂ O/HNO ₃	4095-1000691

Ion Chromatography Standards

CPI also offers high quality, price competitive standards for Ion Chromatography. These products are prepared from only the highest quality raw materials and 18-megaohm de-ionized water. They are available in both 100µg/mL (250mL) and 1000µg/mL (100mL) concentrations. All IC standards are packaged in high density polyethylene Passport IP2 bottles to minimize transpiration.

Ion	Source	100 µg/mL - Volume: 250 mL		1,000 µg/mL - Volume: 100 mL	Replaces
		CPI P/N	CPI P/N	CPI P/N	Dionex® P/N
Acetate	NaOOCCH ₃	4400010008	4400-IC7M		
Ammonium	NH ₄ Cl	4400-IC1	4400-010010		
Bromate	NaBrO ₃		4400-010169		
Bromide	NaBr	4400-010009	4400-IC8M		
Calcium	CaCl ₂	4400-010018	4400-010019		
Chlorate	NaClO ₃		4400-010168		
Chlorite	NaClO ₂		4400-010170		
Chloride	NaCl	4400-IC2	4400-IC2M		37159
Cyanide	NaCN	4400-010011	4400-IC9M		
Fluoride	NaF	4400-010012	4400-IC10M		37158
Iodide	NaI	4400-010013	4400-IC11M		
Magnesium	MgCl ₂	4400-010020	4400-010021		
Nitrate	NaNO ₃	4400-IC3	4400-IC3M		
Nitrite	NaNO ₂	4400-IC4	4400-IC4M		
Nitrogen	NaNO ₂	4400-010014	4400-IC12M		
Nitrogen	NaNO ₃	4400-010015	4400-IC13M		
Phosphate	NH ₄ H ₂ PO ₄	4400-IC5	4400-IC5M		
Potassium	KCl	4400-010022	4400-010023		
Phosphorus	NH ₄ H ₂ PO ₄	4400-010016	4400-IC14M		
Sulfate	Na ₂ SO ₄	4400-IC6	4400-IC6M		37160
Sulfur	Na ₂ SO ₄	4400-010017	4400-IC15M		
Oxalate	Na ₂ C ₂ O ₄	4400-010156	4400-010157		
Formate	NaHCO ₂	4400-010158	4400-010159		

Ion Chromatography

Peak Performance™ Ion Chromatography Standards are prepared from high-purity starting materials and 18- mega-ohm de-ionized water. Only pre-cleaned Passport IP2 bottles are used. Call for pricing on custom single-element IC and multi-element IC standards!



Ion Chromatography Standards

Multi-Element IC Standards

Solution 1		Solution 2		Solution 3	
CPI P/N	Volume	CPI P/N	Volume	CPI P/N	Volume
4400-010024	250mL	4400-010025	250mL	4400-010026	250mL
µg/mL in H ₂ O		µg/mL in H ₂ O		µg/mL in H ₂ O	
Nitrate	100	Nitrate	1000	Fluoride	100
Nitrite*	100	Nitrite*	1000	Chloride	100
Phosphate	100	Phosphate	1000	Bromide	50
Fluoride	100	Fluoride	1000	Phosphate	100
Bromide	100	Bromide	1000	Sulfate	300
Chloride	100	Chloride	1000		
Sulfate	100	Sulfate	1000		
*Shipped Separately		*Shipped Separately			

Solution 4		Solution 5a		Solution 5b	
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This Standard includes five anions for general anion determinations. Replaces Dionex® P/N 37157.

This Standard includes six cations for general cation determinations to be used with the IonPac® CS3, CS10 or CS11. Replaces Dionex® P/N 40187.

This Standard includes six cations for general cation determinations to be used with the IonPac® CS12, CS12A or CS15. Replaces Dionex® P/N 46070.

CPI P/N	Volume	CPI P/N	Volume	CPI P/N	Volume
4400-010160	100mL	4400-010161	50mL	4400-010162	50mL
µg/mL in H ₂ O		µg/mL in H ₂ O		µg/mL in H ₂ O	
Fluoride	20	Lithium	50	Lithium	50
Chloride	30	Sodium	200	Sodium	200
Nitrate	100	Ammonium	400	Ammonium	250
Phosphate	150	Potassium	200	Potassium	500
Sulfate	150	Magnesium	200	Magnesium	250
		Calcium	1000	Calcium	500

IC Eluent Concentrates

Concentrate 1		Concentrate 2		Concentrate 3	
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This Concentrate is for the IonPac® AS4A, AS4A-SC or AS9-SC Column. Replaces Dionex® P/N 39513.

This Concentrate is for the IonPac® AS3 or AS4 Column. Replaces Dionex® P/N 37161.

For Methods Development. Use with Concentrate #4 to prepare Eluents with DI water (CPI P/N 4400-010081). Replaces Dionex® P/N 37162.

CPI P/N	Volume	CPI P/N	Volume	CPI P/N	Volume
4400-010163	100mL	4400-010164	500mL	4400-010165	500mL
Molarity		Molarity		Molarity	
Sodium Carbonate/Bicarbonate Concentrate (100X Concentrate)		Sodium Carbonate/Bicarbonate Concentrate (100X Concentrate)		Carbonate Anion Eluent 0.5M	
Na ₂ CO ₃	0.18M	Na ₂ CO ₃	0.22M		
NaHCO ₃	0.17M	NaHCO ₃	0.28M		

Concentrate 4

For Methods Development. Use with Concentrate #3 to prepare Eluents with DI water (CPI P/N 4400-010081). Replaces Dionex® P/N 37163.

CPI P/N	Volume
4400-010166	500mL
Molarity	
Bicarbonate Anion Eluent	0.5M

Method 300.1 Stock Solutions

Description	Source	Concentration	Volume	CPI P/N
Preservation Solution	Ethylenediammine	100mg/mL	100mL	4400-010173
Surrogate Solution	Cl ₂ CHCO ₂ K	0.5mg/mL	100mL	4400-010172
Eluent Solution	Na ₂ CO ₃	5M	500mL	4400-010171



CPI is now offering the same high-purity materials used in making Peak Performance™ standards. Listed here are just a few of the materials available. A Certificate of Analysis reporting major element assay and metallic impurities and Material Safety Data Sheets accompany every order. Any quantity available – Call for pricing!

Peak Performance™ Metals, Salts and Oxides

Raw Material	Formula	Purity (%)	CPI P/N
Aluminum Shot	Al	99.999+	4400-090019
Ammonium Chloride	NH ₄ Cl	99.999	4400-090020
Ammonium Dihydrogen Phosphate	NH ₄ H ₂ PO ₄	99.999	4400-090021
Ammonium Hexachloroiridate	(NH ₄) ₃ IrCl ₆	99.99	4400-090125
Ammonium Hexachloroosmate	(NH ₄) ₂ OsCl ₆	99.99	4400-090127
Ammonium Hexachlororhodate	(NH ₄) ₃ RhCl ₆	99.99	4400-090128
Ammonium Hexachlororuthenate	(NH ₄) ₂ RuCl ₆	99.99	4400-090126
Ammonium Hexafluorogermanate	NH ₄ GeF ₆	99.998	4400-090100
Ammonium Hexafluorosilicate	NH ₄ SiF ₆	99.999	4400-090094
Ammonium Metavanadate	NH ₄ VO ₃	99.995	4400-090086
Ammonium Tetrafluoroborate	NH ₄ BF ₄	99.5	4400-090135
Ammonium Nitrate	NH ₄ NO ₃	99.999	4400-090029*
Antimony Shot	Sb	99.9999	4400-090059
Arsenic Lump	As	99.999+	4400-090060*
Arsenic Oxide	As ₂ O ₃	99.998	4400-090022*
Barium Carbonate	BaCO ₃	99.999	4400-090023*
Beryllium Acetate	Be ₄ O(C ₂ H ₃ O ₂) ₆	99.999	4400-090130*
Beryllium Lump	Be	99.9	4400-090085*
Bismuth Shot	Bi	99.999	4400-090024
Orthoboric Acid	H ₃ BO ₃	99.999	4400-090039
Cadmium Shot	Cd	99.999	4400-090025
Calcium Carbonate	CaCO ₃	99.999	4400-090026
Calcium Chloride	CaCl ₂	99.999	4400-090030
Cerium Oxide	CeO ₂	99.995	4400-090102
Cesium Carbonate	Cs ₂ CO ₃	99.994	4400-090061
Chromium Pieces	Cr	99.995	4400-090027
Cobalt Powder	Co	99.999	4400-090028*
Copper Shot	Cu	99.999	4400-090031
Dysprosium Oxide	Dy ₂ O ₃	99.99	4400-090103
Erbium Oxide	Er ₂ O ₃	99.99	4400-090104
Europium Oxide	Eu ₂ O ₃	99.99	4400-090105
Gadolinium Oxide	Gd ₂ O ₃	99.999	4400-090106
Gallium Metal	Ga	99.999	4400-090124
Germanium Powder	Ge	99.999	4400-090062
Hafnium Metal	Hf	99.9	4400-090063*
Holmium Oxide	Ho ₂ O ₃	99.99	4400-090107
Indium Metal	In	99.999	4400-090099
Iron Granules	Fe	99.999	4400-090032
Lanthanum Oxide	La ₂ O ₃	99.999	4400-090108
Lead Shot	Pb	99.999	4400-090033
Lithium Carbonate	Li ₂ CO ₃	99.999	4400-090034
Lutetium Oxide	Lu ₂ O ₃	99.999	4400-090109
Magnesium Chloride	MgCl ₂ •6H ₂ O	99.999	4400-090118
Magnesium Granules	Mg	99.99	4400-090035*
Magnesium Nitrate	MgNO ₃ •4H ₂ O	99.999	4400-090036*
Manganese Flakes	Mn	99.99	4400-090037
Mercury Liquid	Hg	99.999	4400-090064*
Molybdenum Powder	Mo	99.999	4400-090065*
Neodymium Oxide	Nd ₂ O ₃	99.99	4400-090110
Nickel Powder	Ni	99.999	4400-090038
Niobium Powder	Nb	99.99	4400-090066*
Palladium Powder	Pd	99.999	4400-090040
Platinum Powder	Pt	99.999	4400-090129
Potassium Chloride	KCl	99.999	4400-090041
Potassium Nitrate	KNO ₃	99.999	4400-090043*
Praseodymium Oxide	Pr ₆ O ₁₁	99.99	4400-090111
Rubidium Carbonate	Rb ₂ CO ₃	99.975	4400-090068*
Samarium Oxide	Sm ₂ O ₃	99.99	4400-090112
Scandium Oxide	Sc ₂ O ₃	99.99	4400-090044
Selenium Shot	Se	99.999	4400-090045
Silver Shot	Ag	99.99	4400-090069
Sodium Acetate	NaOOCCH ₃	99.999	4400-090046
Sodium Bromide	NaBr	99.999	4400-090047
Sodium Chloride	NaCl	99.999	4400-090048
Sodium Fluoride	NaF	99.995	4400-090049
Sodium Iodide	NaI	99.999	4400-090050
Sodium Nitrate	NaNO ₃	99.999	4400-090051*
Sodium Nitrite	NaNO ₂	99.99	4400-090052*
Sodium Sulfate	Na ₂ SO ₄	99.996	4400-090071
Strontium Carbonate	SrCO ₃	99.99+	4400-090053
Tantalum Powder	Ta	99.99+	4400-090054*
Tellurium Pieces	Te	99.999	4400-090055
Terbium Oxide	Tb ₄ O ₇	99.995	4400-090113
Thallium Pieces	Tl	99.999	4400-090072
Thulium Oxide	Tm ₂ O ₃	99.995	4400-090114
Tin Shot	Sn	99.999	4400-090056
Titanium Pieces	Ti	99.99	4400-090073
Titanium Powder	Ti	99.99	4400-090096
Tungsten Powder	W	99.999	4400-090057
Ytterbium Oxide	Yb ₂ O ₃	99.99	4400-090115
Yttrium Oxide	Y ₂ O ₃	99.999	4400-090116
Zinc Shot	Zn	99.999	4400-090058
Zirconyl Nitrate	ZrONO ₃	99.99	4400-090093

*Hazardous Shipping Charge

Custom Inorganic Standard Request Form



Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL
Al		Cu		Pb		K		Ta	Others not listed _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
Sb		Dy		Li		Pr		Te	
As		Er		Lu		Re		Tb	
Ba		Eu		Mg		Rh		Tl	
Be		Gd		Mn		Rb		Th	
Bi		Ga		Hg		Ru		Tm	
B		Ge		Mo		Sm		Sn	
Cd		Au		Nd		Sc		Ti	
Ca		Hf		Ni		Se		W	
C		Ho		Nb		Si		U	
Ce		In		Os		Ag		V	
Cs		Ir		Pd		Na		Yb	
Cr		Fe		P		Sr		Y	
Co		La		Pt		S		Zn	
								Zr	

Ion	Source	µg/mL	Ion	Source	µg/mL	Ion	Source	µg/mL
NH ₄	NH ₄ Cl		NO ₂	NaNO ₂		Others not listed		
Br	NaBr		N	NaNO ₃				
Ca	CaCl ₂		N	NaNO ₂				
Cl	NaCl		PO ₄	NH ₄ H ₂ PO ₄				
CN	KCN		K	KCl				
F	NaF		P	NH ₄ H ₂ PO ₄				
I	NaI		SO ₄	Na ₂ SO ₄				
Mg	MgCl ₂		S	Na ₂ SO ₄				
NO ₃	NaNO ₃							

Custom Blend Name _____

Matrix _____ Vol _____ Bottling Instructions _____

Special Considerations _____

My standards purchases are: Monthly Quarterly Semi-Annually Annually

Please send information on other CPI Analytical Instrument Consumables. We use the following analytical techniques:

- AA**
 - Manufacturer: PerkinElmer® Varian® TJA® Hitachi®
 - GBC® ATI/Unicam® IL® Other
 - Configuration: Graphite Furnace Flame Other
- ICP**
 - Manufacturer: Perkin/Elmer® TJA® Leeman® ARL® Varian®
- TOX/AOX**
 - Manufacturer: Tekmar/Dohrmann® Mitsubishi® (COSA)
- TCLP**
 - Manufacturer: Millipore® ADM Other:
- Gas Determination**
 - Manufacturer: LECO® PerkinElmer® Other:
 - Analysis: Nitrogen/Oxygen Carbon/Sulfur Other:
- GC**
 - Manufacturer: HP® Varian® PerkinElmer® Other
 - Detector Types: PID ELCD (Hall®) FID ECD TCD NPD
- GC/MS**
 - Manufacturer: HP® Finnigan® Perkin-Elmer® Varian®
- Solid Phase Extraction (SPE)**
 - SPE Medium: Type: Disk Cartridge
 - Mfg.: J.T. Baker® Varian® Other:
- Purge/Trap**
 - Manifold Type: J.T. Baker® Varian® Zymark® Other:
 - Manufacturer: Tekmar® OI® Dynatech® Other:

Name _____ Title _____ Company _____

Address _____

Phone _____ Fax _____ e-mail _____

Please send information to the following supervisors:

Note: For instrument manufacturers, please see our OEM index on the following page.

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