

The IsoMist Programmable Temperature Spray Chamber

Enhanced Performance for ICP-MS and ICP-OES

The IsoMist Programmable Temperature Spray Chamber, provides the benefits of a temperature-controlled ICP sample introduction system in a compact, convenient package.



Figure 1. IsoMist

Peltier Effect Temperature Control

The temperature is electronically controlled using a powerful inbuilt Peltier device. You can select any temperature between -10C and +60C in 1C increments to provide the optimum conditions for any application. The rapid response of the Peltier device allows a spray chamber temperature of -5C to be reached within 15 minutes.

Versatile Computer Interface

For maximum convenience, the IsoMist can be controlled from your PC via a Bluetooth® wireless interface or a standard USB network connection. The spray chamber temperature can be monitored through a temperature versus time plot on your PC screen. And, for regulatory compliance, the temperature versus time data file can be saved with your results. If these features are not required, once the temperature has been programmed, the IsoMist can be run in stand-alone mode without a PC connection.

Reduced Oxide Interferences in ICP-MS

By introducing the sample at low temperature, the IsoMist reduces oxides as shown in Figure 2, resulting in fewer interferences and improved detection limits.

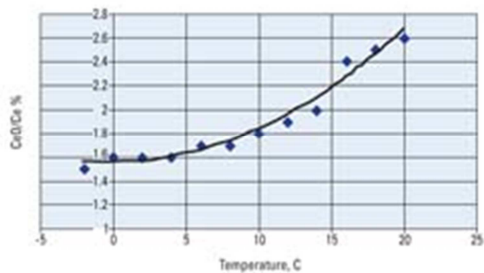


Figure 2. Effect of IsoMist Temperature on ICP-MS Oxide Ratio; Data Courtesy of David Jones, ALS Chemex.

Perfect for Volatile Organics

The temperature can be set as low as -10C to reduce the solvent load on the plasma and allow the straightforward ICP-MS or ICP-OES analysis of even the most volatile organic solvents, as shown in Figure 3.

| | Conc, ug/L | Conc, ug/L |
|----|------------|------------|
| Cd | 57 | 55 |
| Cr | 31 | 32 |
| Cu | 35 | 33 |
| Fe | 24 | 23 |
| Mn | 11 | 12 |
| Ni | 589 | 517 |
| Pb | 451 | 424 |
| Sn | 216 | 213 |
| Ti | 22 | 22 |
| V | 107 | 104 |

Figure 3. Reproducibility of naphtha results at -10C (measurements at 90 minute interval)

Constant Temperature Improves Stability

By holding the spray chamber at a constant temperature, the IsoMist significantly improves long-term signal stability, increasing the likelihood of calibration checks passing. Figure 4 shows the emission signals over 3 hours with the temperature held at a constant 21C compared with a standard system at ambient temperature.

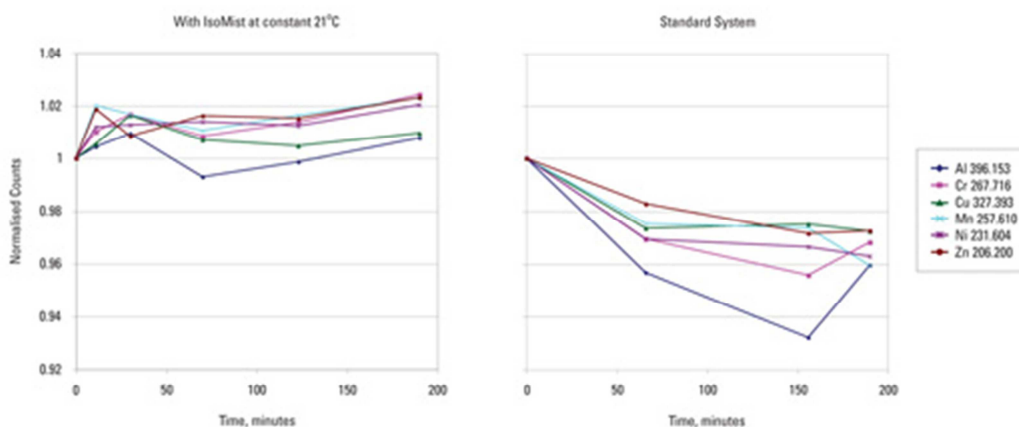


Figure 4. Effect of constant temperature on signal stability.

Heating Mode Enhances Sensitivity

The sensitivity for many analyses is enhanced by running the spray chamber at an elevated temperature, a feature that is particularly important for samples with limited volume. The following table shows that the detection limit with a sample uptake of 20uL/min is better at 60C than 21C and is almost as good as that obtained with a standard system running at 21C with a sample uptake of 2mL/min.

| Temperature | 60°C | 21°C | 21°C |
|---------------|----------|----------|----------|
| Sample uptake | 20uL/min | 20uL/min | 2mL/min |
| | DL, ug/L | DL, ug/L | DL, ug/L |
| Al | 2.3 | 5.1 | 0.9 |
| Cr | 0.5 | 1.1 | 0.2 |
| Cu | 0.3 | 0.5 | 0.2 |
| Ni | 0.5 | 1.7 | 0.2 |
| Zn | 0.3 | 0.7 | 0.08 |

Figure 5. Detection limits at 21C and 60C

Proven Cyclonic Spray Chamber

The IsoMist incorporates the proven Twister cyclonic spray chamber, combining excellent sensitivity and precision with exceptionally fast washout. The Helix nebulizer interface has zero dead volume and provides for convenient nebulizer insertion and removal. This system is compatible with the full range of Glass Expansion nebulizers.



Figure 6. Encapsulated Twister Spray Chamber

Completely Self-Contained Ergonomic Package

The compact design includes a rugged, low maintenance, chemically-resistant polypropylene housing. It provides a much more convenient alternative to a jacketed spray chamber with an external chiller because it does not require an external source of coolant. It is compatible with almost all ICP-MS and ICP-OES models.

Specifications

- Temperature range: -10C to +60C

- Temperature set in 1C increments
- Temperature stability: +/-0.1C
- Cools to -5C within 15 minutes
- Wireless Bluetooth® or USB connection to PC
- PC operating system: Windows® 2000/XP/7/10
- Weight: 2kg
- Dimensions: 195 x 100 x 120mm
- Input voltage: 100 - 250VAC
- Input frequency: 47 - 63Hz
- Maximum current: 2A
- Maximum power: 75W
- Supplied with Encapsulated Twister cyclonic spray chamber, power supply, mains cable, Bluetooth® interface kit, USB cable, operating software, operation manual

Optional PFA and Quartz Spray Chambers

The IsoMist can be used with PFA or quartz spray chambers in addition to the standard glass Twister spray chamber.

The IsoMist can also be ordered with a PFA or quartz spray chamber installed in place of the standard glass spray chamber. Simple add a "P" for PFA or a "Q" for quartz to the part number for the standard kit, eg. KT-1010P for PFA or KT-1010Q for quartz.

Twinnabar Spray Chamber

The IsoMist can be configured with a low volume (20mL) Twinnabar spray chamber for applications with limited sample volume. Note that a special IsoMist version is required - the Twinnabar cannot be used in the standard IsoMist.

Ordering Information

We have established an IsoMist Kit for common ICP-OES and ICP-MS models. Each kit contains the IsoMist module, encapsulated Twister spray chamber, torch interface and mounting bracket (if required). Please select the kit to match your ICP from the following:

IsoMist Programmable Temperature Spray Chambers

| Part Number | Description |
|-------------------------|--|
| KT-1010 | IsoMist Kit for Agilent 7500 |
| KT-1103 | IsoMist Kit for Agilent 7700/8800/8900 |
| KT-1140 | IsoMist Kit for Agilent 7800/7900 |
| KT-1053 | IsoMist Kit for Agilent 4500 |
| KT-1137 | IsoMist Kit for Agilent 5100 |

| | |
|-------------------------|--|
| KT-1014 | IsoMist Kit for Agilent (Varian) 700-ES or Vista Axial |
| KT-1022 | IsoMist Kit for Agilent (Varian) 700-ES or Vista Radial |
| KT-1054 | IsoMist Kit for Agilent (Varian) 700-ES or Vista Axial All Glass System |
| KT-1055 | IsoMist Kit for Agilent (Varian) 700-ES or Vista Radial All Glass System |
| KT-1119 | IsoMist Kit for Agilent 4100/4200 MP-AES |
| KT-1017 | IsoMist Kit for Bruker (Varian) 800-MS |
| KT-1042 | IsoMist Kit for GBC OptiMass |
| KT-1064 | IsoMist Kit for Horiba Jobin Yvon |
| KT-1011 | IsoMist Kit for PerkinElmer Optima 4300/5300/7300V |
| KT-1012 | IsoMist Kit for PerkinElmer Optima 2000/4000/5000/7000/8000DV |
| KT-1063 | IsoMist Kit for PerkinElmer Optima 3000 Axial/DV |
| KT-1096 | IsoMist Kit for PerkinElmer NexION 300 |
| KT-1013 | IsoMist Kit for PerkinElmer Elan |
| KT-1067 | IsoMist Kit for Shimadzu |
| KT-1121 | IsoMist Kit for Spectro Arcos |
| KT-1141 | IsoMist Kit for SpectroBlue |
| KT-1015 | IsoMist Kit for Thermo iCAP 6000/7000 Duo |
| KT-1021 | IsoMist Kit for Thermo iCAP 6000/7000 Radial |
| KT-1018 | IsoMist Kit for Thermo Iris Axial/Duo |
| KT-1058 | IsoMist Kit for Thermo Iris Radial |
| KT-1020 | IsoMist Kit for Thermo Finnigan Element |
| KT-1023 | IsoMist Kit for Thermo (VG) PlasmaQuad |
| KT-1025 | IsoMist Kit for Thermo X Series |
| KT-1024 | IsoMist Basic Kit ROL |

The New IsoMist XR Extended Range Programmable Temperature Spray Chamber

The IsoMist XR programmable temperature controlled cyclonic spray chamber now features an improved thermodynamic design providing an extended temperature range and faster cool-down so your ICP application is ready to go sooner.

The IsoMist XR is a compact, convenient and maintenance-free temperature controlled sample introduction system for all ICP-OES and ICP-MS.



Improve Analytical Stability

On the IsoMist XR, the spray chamber temperature is accurately controlled through an improved thermodynamic design using a multi-stage peltier device. The spray chamber temperature is settable in 1°C increments from -25°C to 80°C guaranteeing optimum conditions for any application. The improved cooling efficiency of the new multi-stage peltier design means the IsoMist XR is ready, sooner and cool-down time is reduced.

Reduce Oxide Formation in ICP-MS

Using the IsoMist XR spray chamber at sub-ambient temperature on an ICP-MS, the sample is cooled so less water vapor is transferred to the plasma resulting in lower oxide formation and reduced polyatomic interferences - improving accuracy and detection limits.

Perfect for Volatile Organics

When analyzing volatile organic solvents such as naphtha and gasoline a lower sample introduction system temperature reduces nebulization efficiency avoiding quenching of the plasma from solvent over-loading. With a minimum temperature of -25°C analyzing volatile organic solvents is even easier.

Constant Temperature Improves Analytical Stability

Fluctuations in the lab temperature affects sample viscosity and nebulization efficiency. Maintaining the sample introduction at a constant and stable temperature improves analytical reproducibility, enhances throughput and lowers operating costs by reducing the need to re-run samples when a calibration verification check standard drifts outside the acceptable limits.

Enhance Sensitivity with Elevated Sample Introduction Temperatures

The sensitivity for many analyses is enhanced by running the spray chamber at an elevated temperature, which is particularly important for samples with limited volume.

A Spray Chamber Optimized for Performance

The IsoMist XR incorporates a proven Twister cyclonic spray chamber available in either glass, quartz or PFA - all with Helix™ O-ring free, zero dead-volume nebulizer interface. Compared to a Scott type spray chamber, cyclonic spray chambers are more sensitive and better washout between samples. The O-ring free, Helix nebulizer interface eliminates sample contamination and ensures simple nebulizer removal and replacement for routine cleaning. With a positive stop built-in, Helix™ ensures the correct and reproducible nebulizer insertion depth for consistent analytical performance.



Elegant, Ergonomic Design

The IsoMist XR is an elegant, compact, stand-alone system manufactured from inert materials resistant to attack from acids and solvents commonly used in ICP analysis. By using a peltier thermo-electric device to maintain the spray chamber temperature, the messy, noisy and high-maintenance refrigerated, recirculating baths used with jacketed spray chambers is eliminated. The compact design also means the IsoMist XR Programmable Temperature Controlled Spray Chambers are compatible with any ICP-OES and ICP-MS.

Low Volume Spray Chamber Option for Limited Sample Volumes

The IsoMist XR can be configured with a low volume (20mL) Twinnabar spray chamber for applications with limited sample volume. Note that a special IsoMist XR version is required - the Twinnabar cannot be used in the standard IsoMist XR

Ordering Information

We have established an IsoMist XR Kit for common ICP-OES and ICP-MS models. Each kit contains the IsoMist module, encapsulated Twister spray chamber, torch interface and mounting bracket (if required). Please select the kit to match your ICP from the following:

IsoMist XR Programmable Temperature Spray Chambers

<blockquote>

| Part Number | Description |
|----------------------------|--|
| KT-1010-XR | IsoMist XR Kit for Agilent 7500 |
| KT-1103-XR | IsoMist XR Kit for Agilent 7700/8800/8900 |
| KT-1140-XR | IsoMist XR Kit for Agilent 7800/7900 |
| KT-1053-XR | IsoMist XR Kit for Agilent 4500 |
| KT-1137-XR | IsoMist XR Kit for Agilent 5100 |
| KT-1014-XR | IsoMist XR Kit for Agilent (Varian) 700-ES or Vista Axial |
| KT-1022-XR | IsoMist XR Kit for Agilent (Varian) 700-ES or Vista Radial |
| KT-1054-XR | IsoMist XR Kit for Agilent (Varian) 700-ES or Vista Axial All Glass System |
| KT-1055-XR | IsoMist Kit for Agilent (Varian) 700-ES or Vista Radial All Glass System |
| KT-1119-XR | IsoMist XR Kit for Agilent 4100/4200 MP-AES |
| KT-1017-XR | IsoMist XR Kit for Bruker (Varian) 800-MS |
| KT-1042-XR | IsoMist XR Kit for GBC OptiMass |
| KT-1064-XR | IsoMist Kit for Horiba Jobin Yvon |
| KT-1011-XR | IsoMist XR Kit for PerkinElmer Optima 4300/5300/7300V |
| KT-1012-XR | IsoMist XR Kit for PerkinElmer Optima |

2000/4000/5000/7000/8000DV

[KT-1063-XR](#) IsoMist XR Kit for PerkinElmer Optima 3000 Axial/DV

[KT-1096-XR](#) IsoMist XR Kit for PerkinElmer NexION 300

[KT-1013-XR](#) IsoMist XR Kit for PerkinElmer Elan

[KT-1067-XR](#) IsoMist XR Kit for Shimadzu

[KT-1121-XR](#) IsoMist XR Kit for Spectro Arcos

[KT-1141-XR](#) IsoMist XR Kit for SpectroBlue

[KT-1015-XR](#) IsoMist XR Kit for Thermo iCAP 6000/7000 Duo

[KT-1021-XR](#) IsoMist XR Kit for Thermo iCAP 6000/7000 Radial

[KT-1018-XR](#) IsoMist XR Kit for Thermo Iris Axial/Duo

[KT-1058-XR](#) IsoMist XR Kit for Thermo Iris Radial

[KT-1020-XR](#) IsoMist XR Kit for Thermo Finnigan Element

[KT-1023-XR](#) IsoMist XR Kit for Thermo (VG) PlasmaQuad

[KT-1025-XR](#) IsoMist XR Kit for Thermo X Series

[KT-1024-XR](#) IsoMist XR Basic Kit ROL

[KT-1027-XR](#) IsoMist XR Basic Kit LOL