

# IsoMist Temperature Controlled Spraychamber

## Technical Overview



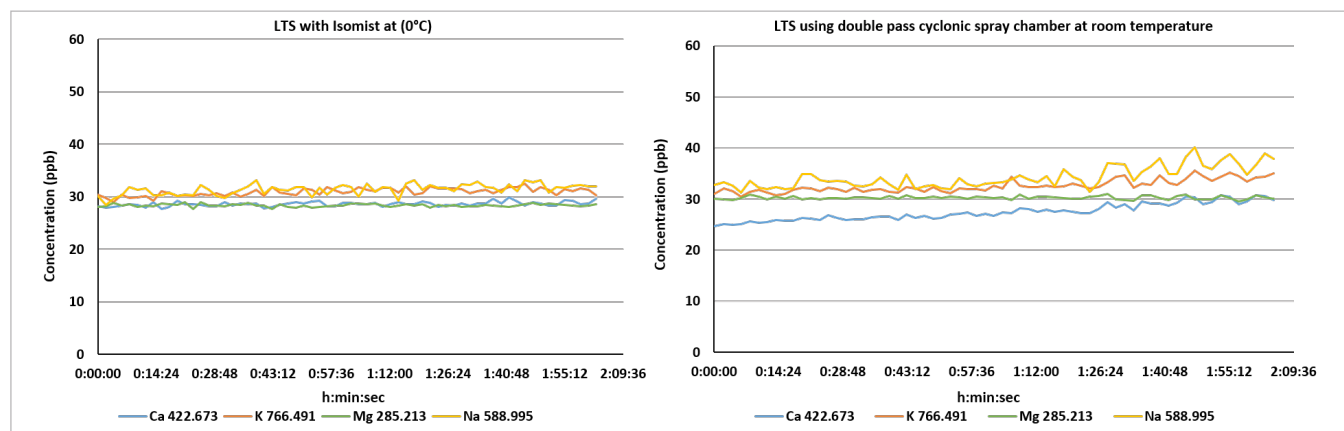
### Introduction

The Agilent IsoMist Temperature Controlled Spray Chamber is an optional programmable spray chamber for Agilent's Microwave Plasma Atomic Emission Spectrometers (MP-AES).

Housed in a thermally conductive polymer layer, the glass double pass spray chamber uses a powerful Peltier device to accurately control the temperature of the sample introduction system. Fully controllable from within the MP Expert software that controls the MP-AES instrument, the temperature can be set, and maintained, between -10 °C and +60 °C. Low temperature control can help with improved long term stability of volatile organic solvents and viscous oil samples. In contrast, ambient temperature control can be used to maintain the spray chamber temperature in situations where the laboratory temperature is prone to fluctuations. Stable spray chamber conditions help to ensure consistent nebulization and sample transport characteristics that are vital to maximizing signal stability.

## Benefits

### Low temperature stability for the analysis of volatile organic solvents



**Figure 1.** Long term stability of major elements in methanol spiked at 30 ppb measured over 2 hours, with (left) and without (right) the IsoMist temperature controlled spray chamber.

The IsoMist provides excellent signal stability for MP-AES analysis of volatile organic solvents, such as methanol [1]. Figure 1 compares the long term stability (LTS) of major elements in methanol spiked at 30 ppb— with and without the IsoMist temperature controlled spray chamber.

Cooling the spray chamber for the analysis of volatile organics reduces the solvent loading on the plasma, ensuring a more stable plasma. This can be seen in Figure 1 (left); the signal stability over the 2 hour sampling period is significantly improved by operating the IsoMist at 0 °C compared with the results obtained using a double pass cyclonic spray chamber at room temperature (Figure 1, right).

Table 1 shows the precision (%RSD) over the same 2 hour period with and without the use of the IsoMist. Precision is improved for methanol analysis for all elements with the IsoMist spray chamber at 0 °C.

**Table 1.** LTS results of major elements in methanol spiked at 30 ppb over a 2-hour period; comparison of %RSDs with and without IsoMist

Element	Wavelength (nm)	With IsoMist 0°C %RSD	Without IsoMist Room Temp %RSD
Ca	422.673	1.55	5.93
K	766.491	2.34	3.67
Mg	285.213	1.00	1.10
Na	588.995	3.25	6.13

The Method Detection Limits (MDLs) for the four major elements in methanol were determined using the MP-AES with IsoMist held at 0 °C. Excellent results (Table 2) were achieved, with MDLs of less than 3 ppb for all elements.

**Table 2.** Method detection limits (MDLs) for major elements in methanol using the IsoMist cooled to 0 °C.

Element	Wavelength (nm)	MDL (ppb)
Ca	422.673	1.57
K	766.491	1.35
Mg	285.213	0.93
Na	588.995	2.75

### Laboratory ambient temperature stability

Accurate, long term analysis of samples is much more difficult if the ambient temperature in the laboratory fluctuates. In this situation the IsoMist can be used to maintain a stable spray chamber temperature.

### Ease of use

- The Agilent IsoMist Temperature Controlled Spray Chamber is simple to install and set up. It connects to the PC via Bluetooth or USB and is then fully controllable from the MP Expert software.

- It is compatible with Agilent's OneNeb, OneNeb Series 2 and glass concentric nebulizers via a Helix fitting.
- IsoMist is a rugged, compact unit that is easily removed for cleaning and routine maintenance.



**Figure 2.** The removable glass double pass spray chamber is covered in a thermally conductive polymer layer that is easily cleaned.

## Ordering information

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## Specifications

- Temperature range: -10 °C to +60 °C with 1 °C increments
- Temperature accuracy: + 0.1 °C
- Response time: rapid response e.g. from room temperature to -5 °C in 15 minutes
- Weight: 2 kg
- Dimensions: (L x W x H) 195 x 100 x 120 mm
- Compatibility: any configuration of Agilent's 4100, 4200 and 4210 MP-AES and with Agilent's SPS 3 or SPS 4 autosampler
- Communication: Bluetooth® EDR 2.0 wireless network or a standard USB cable
- PC requirements: a USB port and Windows 7 or 10 64 Bit operating system

## Reference

1. Determination of major elements in methanol using the Agilent 4200 MP-AES with External Gas Control Module, Agilent publication, 2015, 5991-6469EN

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