

HydraMist Simultaneous Cold Vapor/Pneumatic Nebulization Spray Chamber

The Glass Expansion HydraMist is a sensitive, simple-to-use spray chamber for Inductively Coupled Plasma (ICP) that supports simultaneous operation of conventional pneumatic nebulization and cold-vapor/hydride generation. Cold vapor generation can provide more than 10-fold improvement in sensitivity on ICP for elements such as As, Sb, Se, Tl and Hg. The generation of volatile species of these elements results in increased analyte loading to the analytical plasma giving lower detection limits.

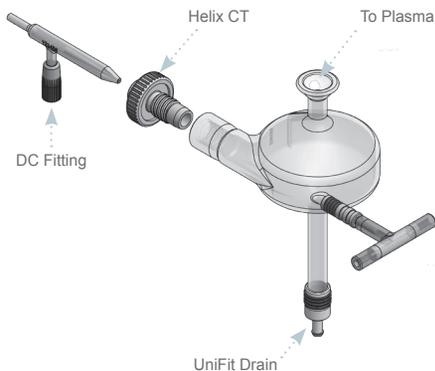
The design of the HydraMist spray chamber is based upon Glass Expansion's industry-standard cyclonic spray chamber, giving excellent sensitivity and short-term analytical precision with fast washout. The HydraMist spray chamber features a secondary inlet port that mixes the aerosolized sample and liquid reductant in the aerosol phase inside the spray chamber for rapid conversion of the As, Sb, Se, Tl and Hg analytes into volatile hydride species. The unique drain design ensures fast, complete removal of waste from the spray chamber, eliminating excess hydrogen build-up that causes sample reflux degrading analytical precision.

The HydraMist spray chamber features:

- The same outstanding short-term analytical precision and washout as other Glass Expansion cyclonic spray chambers
- Fast and complete generation formation of volatile As, Se, Sb, Tl and Hg species for the best detection limits in hydride generation mode
- A unique drain design and cyclonic aerosol action eliminates hydrogen build-up and sample reflux that degrades short-term precision
- Economic, just replace your current spray chamber and keep your existing nebulizer
- Improve productivity by analysing non-hydride forming elements and cold vapor elements simultaneously

Simple to setup with fast changeover, the HydraMist Spray chamber can be operated as a:

- Conventional cyclonic spray chamber with pneumatic nebulization
- Sensitive, simultaneous cold vapor and pneumatic nebulization mode with greater than 10 fold improvement in detection limits for the cold vapor elements without compromising performance of non-hydride forming elements
- Simple, simultaneous hydride and pneumatic nebulization mode improves hydride forming detection limits 5-fold, while maintaining detection limits for non-hydride elements



The HydraMist spray chamber uniquely mixes the aerosolized sample and liquid to ensure complete formation of the volatile hydride species. Other hydride generation systems rely on a slow liquid/liquid mixing of the sample and reductant which results in incomplete formation of the volatile hydride species and excess hydrogen build-up in the drain. These systems suffer from low sensitivity and poor analytical precision, significantly compromising detection limits.

Element	Pneumatic Nebulization	Sensitive simultaneous hydride/pneumatic nebulization mode	Simple simultaneous hydride/pneumatic nebulization mode
λ	(ug/L)	(ug/L)	(ug/L)
As 188	3.7	0.2	0.5
Hg 194	1.2	0.07	0.1
Sb 206	3.6	0.2	0.4
Se 196	2.9	0.2	0.5
Cd 214	0.1	0.1	0.1
Co 238	0.4	0.5	0.7
Cr 267	0.5	0.3	0.3
Cu 327	0.5	0.6	0.6
Fe 238	0.4	0.3	0.4
Mn 257	0.05	0.04	0.03
Mo 202	0.5	0.7	0.7
Ni 231	0.7	1.0	1.0
Pb 220	1.9	2.3	2.6
Tl 190	2.1	0.2	0.2
Zn 213	0.2	0.2	0.2

Table 1. Measured 3 σ detection limits (in ug/L) with an Agilent Technologies 5100 SVDV in axial mode at 1.4 kW RF power and 20 second integration time