

IMPROVE SENSITIVITY AND PRECISION, EVEN WITH HIGH TDS SAMPLES

Agilent OneNeb Series 2 Nebulizers

Agilent OneNeb Series 2 nebulizers take robustness and durability to the next level, while retaining the performance enhancements of the original Agilent OneNeb. They can replace conventional glass concentric nebulizers and some inert nebulizers.

These nebulizers use Flow Blurring nebulization, which ensures better sensitivity and precision—plus greater tolerance to samples with high levels of Total Dissolved Solids (TDS)—compared to conventional glass concentric nebulizers. Advantages include:

Flexible: Now you don't have to switch between nebulizers when changing applications.

The OneNeb Series 2 is suitable for:

- Routine samples
- Volume-limited samples where low uptake rates are preferred
- High TDS samples
- Samples prepared in aggressive acid digests (including HF)
- Samples prepared in organic solvents

Inert: Polymeric construction ensures compatibility with virtually any sample, including organic petrochemical solvents—plus samples from geochemical digests and fusions.

Robust: Unlike glass concentric nebulizers, there is virtually no risk of damage if the OneNeb Series 2 is accidentally dropped.

Easy to use: Simply replace your existing glass concentric nebulizer with the OneNeb Series 2. No other method changes are required.

Simple maintenance: Handle the OneNeb Series 2 like a conventional nebulizer; just rinse with your rinse solution after analysis, and clean regularly.

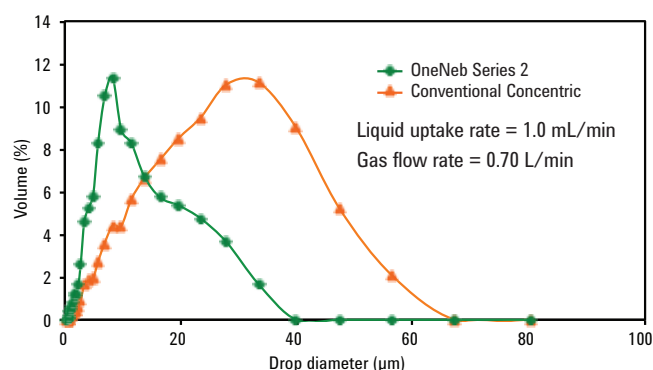
10 benefits of the Agilent OneNeb Series 2 Nebulizer

1. Eliminates downtime when switching applications and nebulizers
2. Inert: use with virtually any solution
3. Lower running costs: Virtually indestructible, even if dropped
4. Improve productivity: Reduces reporting limits and LODs, eliminating rework
5. Confidence in results: Typical precision is <1% RSD
6. Higher throughput: Excellent long-term stability means longer runs
7. Less downtime: Minimize blockage with high TDS samples
8. Suitable for any ICP-OES
9. Hassle free: Replaces a conventional glass concentric nebulizer without adaptors or method changes
10. Reduced administration costs: Agilent can satisfy all of your supply needs

THE AGILENT ONENEB SERIES 2 OUTPERFORMS CONVENTIONAL NEBULIZERS

Improved precision and sensitivity

Flow Blurring nebulization creates a fine aerosol where the majority of droplets are $< 10 \mu\text{m}$. The smaller droplets are more efficiently desolvated and excited in the plasma, enhancing precision. The high proportion of smaller droplets maximizes transport efficiency, increasing sensitivity up to 4 times, even at low sample uptake rates.



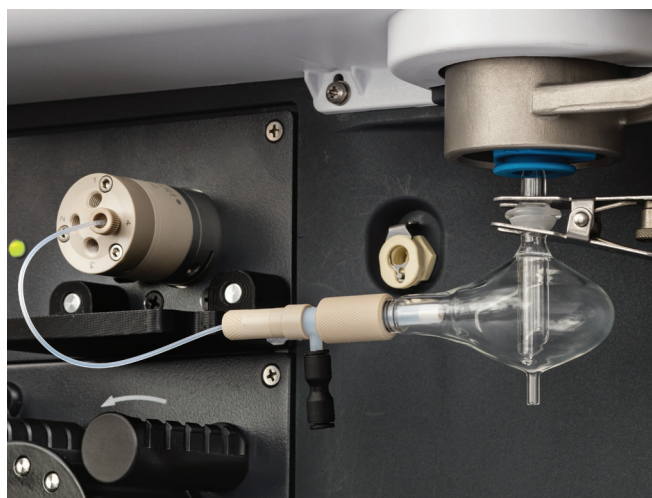
The OneNeb Series 2 nebulizer (green) creates an aerosol with smaller droplets and a narrower size distribution than a conventional Conikal nebulizer (orange).

Lower detection limits

With higher transport efficiency and a finer aerosol than conventional glass concentric nebulizers, the OneNeb Series 2 delivers robust performance with lower detection limits.

Element	CGN DL	OneNeb DL	DL improvement ratio (%)
Ag 328.068	0.61	0.61	100
Al 167.019	1.94	1.53	127
As 188.980	12	9.84	122
Ba 455.403	0.07	0.05	162
Be 313.042	0.01	0.01	193
Ca 396.847	0.09	0.07	121
Cd 214.439	1.27	0.91	139
Co 238.892	1.9	1.7	110
Cr 267.716	0.86	0.7	123
Cu 327.395	1.76	0.96	183
Fe 238.204	0.9	0.68	132
K 766.491	59	38	154
Mg 279.553	0.05	0.05	107
Mn 257.610	0.19	0.15	131
Na 589.592	2	1.04	197
Ni 231.604	5	5	108
Pb 220.353	12	10	113
Se 196.026	17	13	133
Tl 190.794	15	12	129
V 292.401	1.24	0.96	129
Zn 213.857	0.5	0.49	101

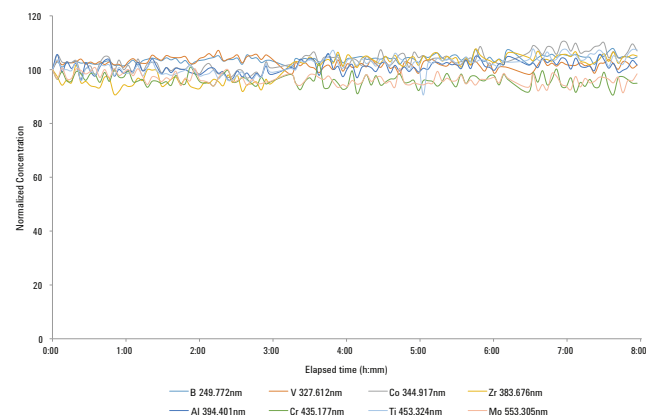
Radial ICP-OES detection limits achieved with the OneNeb Series 2 nebulizer are compared against those achieved with a concentric glass nebulizer (CGN) using a 30 second integration. The Agilent OneNeb Series 2 provided superior detection limits for most elements.



Superior TDS tolerance and long-term stability

The OneNeb Series 2 is very tolerant of higher TDS levels (up to 25%), so you can run samples that might induce blockage with conventional nebulizers. These samples include estuarine waters, brines, fine chemicals, or used oils with suspended particulates. The OneNeb Series 2 also provides superb long-term stability with excellent chemical resistance.

Long term stability (8h)

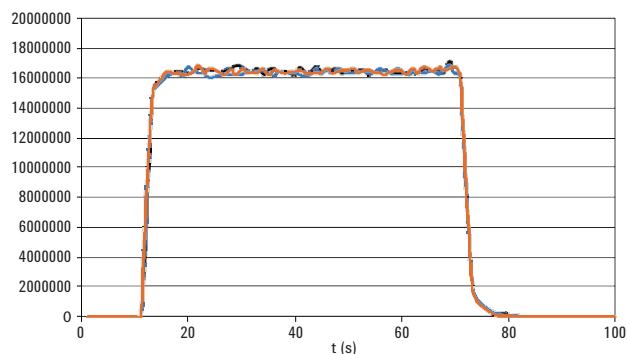


Long-term stability: 8 hours continuous measurement of a nickel alloy CRM (IN 100) prepared in a 5% HF/20% aqua regia digest and analyzed using the Agilent 4210 MP-AES with an inert sample introduction system that has a precision of < 5% RSD for all elements.

Increased sample throughput and accuracy

The OneNeb Series 2 provides the fastest wash-out compared to many other nebulizers. The shortened rinse times increase sample throughput and the fast wash-out also reduces memory effects.

Intensity

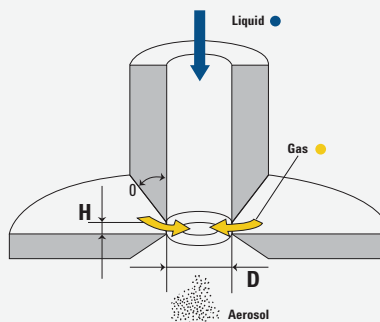


Washout profile for 25 ppm Mn in 1% nitric acid using the single-pass glass cyclonic spray chamber (3 replicates).

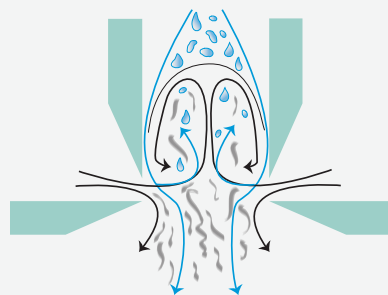
Why Flow Blurring Nebulization?

Conventional nebulizers rely on the venturi effect to produce an aerosol as the nebulizer gas flow is forced through the tip past the inner sample capillary. The narrow sample capillary is prone to blockages—especially with samples containing particulates or high TDS levels.

In contrast, Flow Blurring nebulization introduces nebulizer gas axially into the solution flow. With an appropriate gap between the capillary tip and the nebulizer orifice, the nebulizer gas flow promotes highly turbulent mixing. An aerosol plume is created with fine micro droplets. With no pressure drop and a constant diameter capillary, blockage is virtually eliminated. This technique is suitable for essentially any liquid, and provides high efficiency across a wide range of solution flow rates.



The Flow Blurring nozzle configuration promotes highly turbulent mixing between the liquid sample and the nebulizer gas flow—creating a fine aerosol of extremely small droplets.



The nebulizer gas flow (black) is introduced axially into the incoming sample flow (blue). This creates a fine aerosol by inducing turbulent mixing with the incoming liquid.

To learn more, visit www.agilent.com/chem/oneneb2

Agilent OneNeb Series 2 Nebulizer Specifications

Supplied with replaceable sample Capillary/connector assembly, quick release connector for nebulizer gas inlet, and conical adapter for peristaltic pump tubing.

Configuration	Pneumatic concentric nebulizer
Material	High-tech EFTE body with PEEK fittings
Body	6 mm od; compatible with most spray chambers
Sample capillary	<ul style="list-style-type: none">• FEP natural, 1/16 in (1.6 mm) od, 0.5 mm id x 750 mm L• Connects to nebulizer using a PEEK threaded connector• Capillary/connector assembly is removable and replaceable
Sample connection	<ul style="list-style-type: none">• PEEK conical adapter supplied for secure connection to peristaltic pump tubing• Suits pump tubing with id 0.020 to 0.030 in (0.5 -0.75 mm)
Nebulizer gas connector	Quick-release
Solution uptake range	<ul style="list-style-type: none">• 0.04-2.0 mL min⁻¹, allowing analysis of volume limited samples• Sample solutions must be pumped; the OneNeb Series 2 will not self-aspirate
Compatibility	<ul style="list-style-type: none">• Fits standard glass cyclonic, inert and Scott-type spray chambers• Use cyclonic spray chamber for optimal performance• Direct replacement for standard glass concentric nebulizers and inert nebulizers with a 6 mm od tip• Suitable for Agilent ICP-OES/MP-AES and PerkinElmer Optima ICP-OES systems
Typical applications	<ul style="list-style-type: none">• High TDS (up to 25%) samples• Samples with large particle sizes (up to 150 µm diameter)• Acidic solutions, including aqua regia, HF, and 4-acid digests• Samples prepared in organic solvents• Limited-volume samples, requiring low solution uptake rates

Ordering Information

Description	Part No.
OneNeb Series 2 inert nebulizer for Agilent ICP-OES/MP-AES systems	G8010-60293
OneNeb Series 2 inert nebulizer for PerkinElmer Optima ICP-OES systems	8003-0951
Endcap for use with Scott spray chamber (PerkinElmer Optima ICP-OES)	8003-0335
PEEK threaded Capillary/connector for assembly	G8010-60345
PEEK conical adapter; joins sample capillary to peristaltic pump tubing	5043-0502



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