GORE® Ozonation Modules
For Semiconductor & Microelectronics Fabrication Processing

The cleanest, bubble-free, highest concentration ozone water solution

The industry is shifting to ozone water treatment as an alternative to commonly used chemical-based mixtures for a more environmentally friendly and cost-saving cleaning process. They need reduced conventional chemical consumption, ease of waste treatment, and a safe and energy-efficient process at room temperature. The industry also needs cleaner ozone water at a higher concentration beyond the current benchmark to help increase yield. Cleaner ozone water ensures no organic contamination on Si wafer and FPD applications.

Gore offers unique ozonation modules that use expanded polytetrafluoroethylene (ePTFE) membrane technology to solve these challenges compared to alternative technologies.

Proven continuous, consistent concentration & flow

GORE® Ozonation Modules are proven to achieve the highest concentration up to 200 mg/L, unlike alternative technologies. They continuously and consistently dissolve ozone gas into ultra-high pure water to generate ozone water (Table 1 and Figures 1-3). Manufactured with microporous ePTFE membranes, these modules allow high water entry pressure (WEP) of more than 0.40 MPa.

Our unique microfiltration membrane technology generates the highest purity and bubble-free ozone water available on the market today than ozone water generated with mechanical mixing technology (Table 2).



Typical Applications

- Silicon (Si) wafer production
- Logic and memory fabrication
- LED/OLED/QOLED flat panel display production
- Photomask

Benefits

- Bubble-free, ultra-high pure ozone water at highest concentration up to 200 mg/L
- Cleanest ozone water due to unique fluoropolymer construction
- No particle contamination due to ePTFE membrane tube
- High WEP > 0.40 MPa due to microporous membrane technology
- Proven continuous and consistent operation
- Easy-to-control ozone water flow rate and concentration

Together, improving life

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Table 1: Product Characteristics[1]

	Gore Part Number	
Property	**GN-142-300**	**GN-142-650**
Length (Flange-to-Flange) mm	300	650
Diameter mm	142	142
Membrane Material	ePTFE	ePTFE
Housing Material	PTFE/PFA	PTFE/PFA
Ozone Concentration ppm	Up to 200	Up to 200
Water Entry Pressure (WEP) MPa	> 0.40	> 0.40
Maximum Liquid Pressure MPaG	0 to 0.35	0 to 0.35
Maximum Gas Pressure MPaG	0.25	0.25
Recommend Operating Temperature °C	0 to +30	0 to +30

1. Gore recommends replacing modules after 5 years in operation (or use) for consistent and reliable performance.

Figure 1: Dissolving Mechanism of GORE® Ozonation Modules

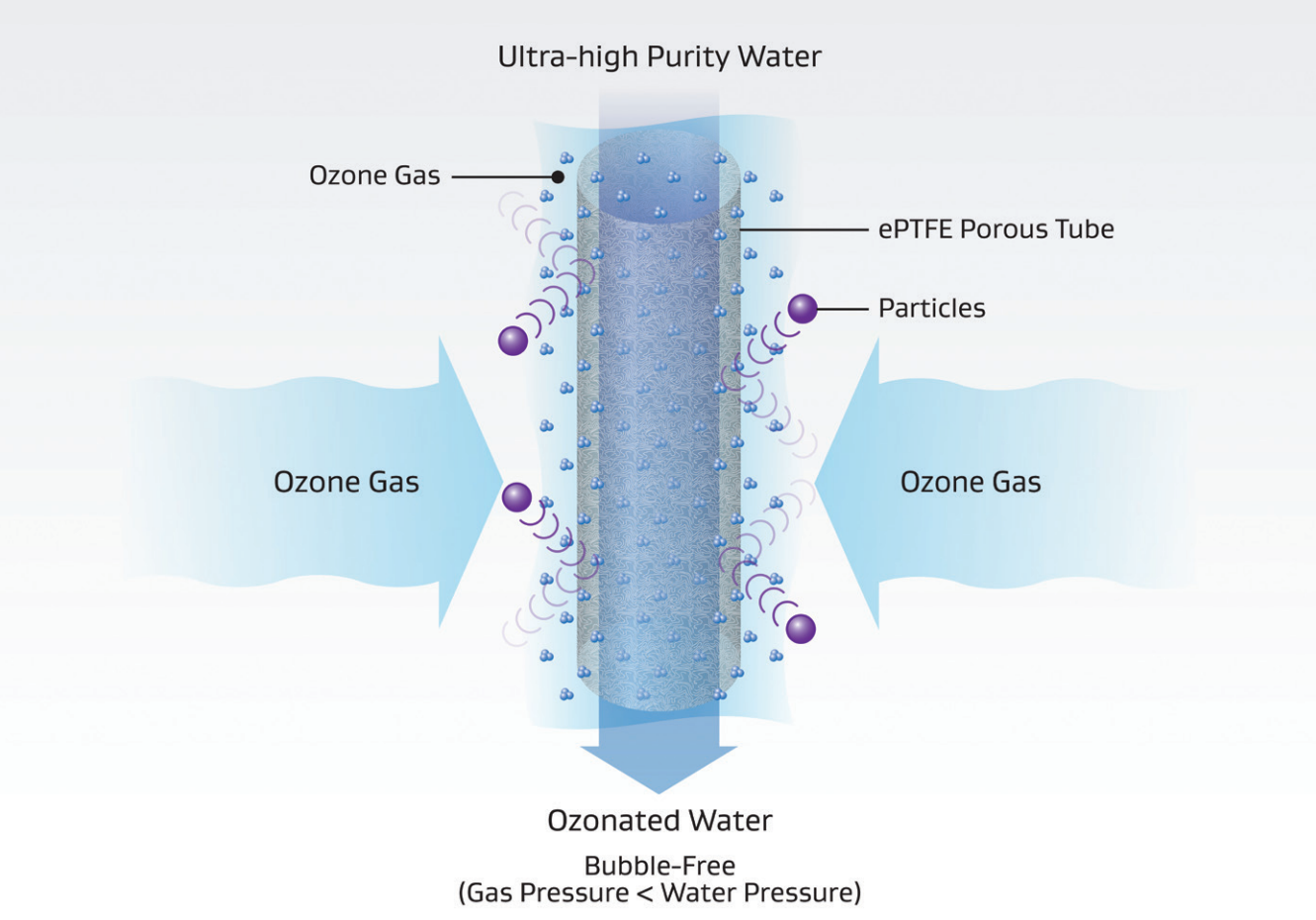
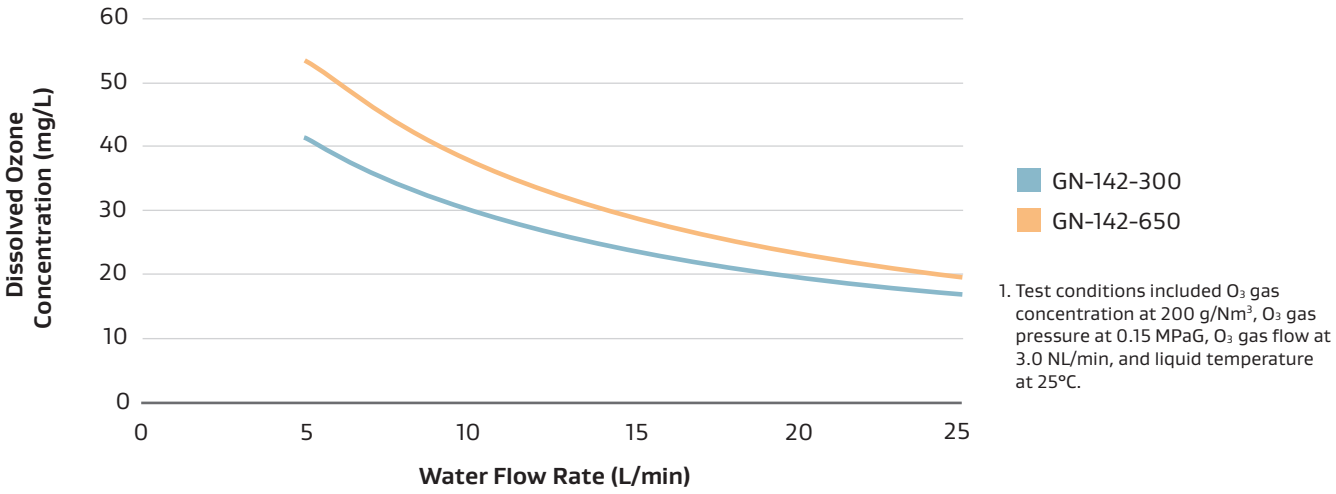
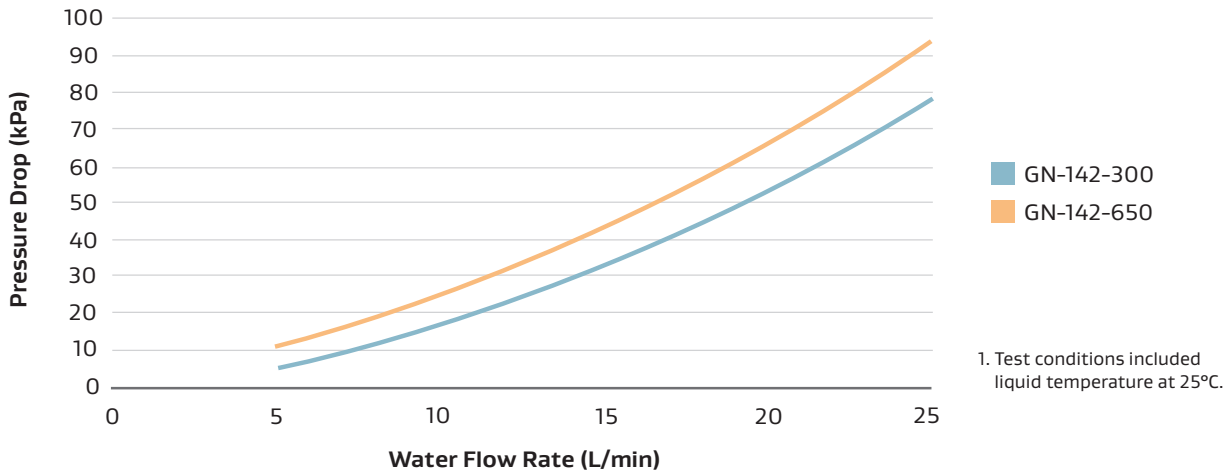


Figure 2: Ozone Dissolving Performance of GORE® Ozonation Modules[1]



1. Test conditions included O_3 gas concentration at 200 g/Nm^3, O_3 gas pressure at 0.15 MPaG, O_3 gas flow at 3.0 NL/min, and liquid temperature at 25°C.

Figure 3: Pressure Drop Performance of GORE® Ozonation Modules[1]



1. Test conditions included liquid temperature at 25°C.

Table 2: Comparison of Ozone-Dissolving Technologies

Characteristics	GORE® Ozonation Modules	Mechanical Mixers (Ejector, Static Mixer)
Cleanliness	• Bubble-free • No particles within O_3 gas with ePTFE membranes	• Potential bubbles from direct injection of O_3 gas • No filtration function to remove potential particles within O_3 gas
Operability	Consistent ozone water concentration and flow	Inconsistency due to the effect of water and gas pressure fluctuation

Ordering Information

For more information or to place an order for GORE® Ozonation Modules for semiconductor and microelectronics fabrication processing, please contact a Gore representative at **gore.com/contact**.

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