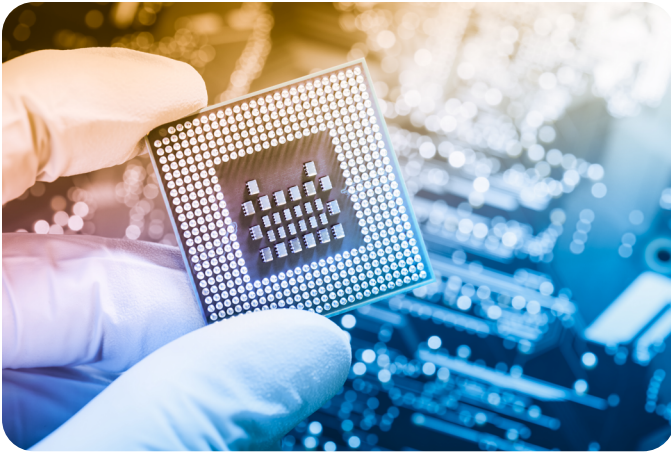


Quality Water for Quality Semiconductors

Consistently reliable quality testing requires consistently high-quality ultrapure water



In the highly competitive semiconductor industry, manufacturers and their chemical suppliers need to ensure the highest quality materials and reagents in order to maximize the yield of flawless semiconductor devices. The water quality required for electronics and semiconductor manufacturing is documented in standards such as the ASTM D5127.

Throughout the wafer production process, the purity of the water and chemicals used must be carefully quality controlled, mainly by sensitive ICP-MS and ion chromatography (IC) analyses. Especially for the advanced integrated chip manufacturing process, having ultrapure water purified down to sub-ppt levels is crucial for performing reproducible quality control analyses.

Ultrapure Water Without Compromise

Assured Quality: Advanced, semiconductor grade purification technologies deliver water free of trace ions, elements and particles.*

Supports Uninterrupted Lab Productivity:

- Certified service engineers maintain your water solution's optimal performance and long lifetime
- Specific device available to continuously feed ICP-MS grade water to autosamplers/autodilutors

Easy Integration: Compact unit seamlessly integrates in cleanrooms and laminar flow hoods.

Reduced Contamination Risk:

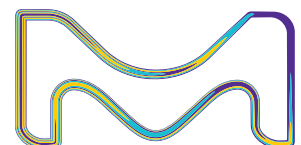
- Hands-free foot pedal dispensing
- Made from specially selected low-extractable materials

Intuitive Use: Touchscreen for easy control, quality monitoring and data management.

*When connected to a Milli-Q® IQ 7 series water purification system.



Milli-Q® ultrapure water systems answer the challenges of the fast-moving and quality-driven semiconductor industry.



Ultrapure water tailored for trace analyses

Don't risk trace contaminants interfering with your sensitive analyses.

The Milli-Q® IQ Element unit delivers high-quality ultrapure water suitable for stringent trace analyses. When coupled with a Milli-Q® IQ 7 series water purification system, the dispensed ultrapure water can be used for even the most sensitive ultra-trace ICP-MS and IC analyses.

Below are data from analyses performed with water obtained from a Milli-Q® IQ Element unit connected to a Milli-Q® IQ 7005 water purification system.

ICP-MS analyses of ultrapure water

Element	Isotope	Sample (ng/L)	DL (ng/L)	Cell mode
Aluminium (Al)	27	0.07	0.04	[Cool NH ₃]
Antimony (Sb)	121	< DL	0.02	[NH ₃]
Arsenic (As)	75	0.06	0.04	[O ₂]
Barium (Ba)	138	< DL	0.05	[NH ₃]
Boron (B)	11	< DL	0.50	No Gas
Cadmium (Cd)	111	< DL	0.08	[Warm NH ₃]
Calcium (Ca)	40	< DL	0.29	[H ₂]
Chromium (Cr)	52	0.08	0.02	[Cool NH ₃]
Copper (Cu)	63	< DL	0.04	[Cool NH ₃]
Iron (Fe)	56	< DL	0.50	[Cool NH ₃]
Lead (Pb)	208	< DL	0.08	[Warm NH ₃]
Lithium (Li)	7	< DL	0.04	[Cool NH ₃]
Magnesium (Mg)	24	0.01	0.01	[Cool NH ₃]
Manganese (Mn)	55	0.01	0.02	[Cool NH ₃]
Nickel (Ni)	60	< DL	0.16	[Cool NH ₃]
Potassium (K)	39	0.54	0.16	[Cool NH ₃]
Sodium (Na)	23	0.68	0.11	[Cool NH ₃]
Strontium (Sr)	88	< DL	0.02	No Gas
Tin (Sn)	118	< DL	0.15	No Gas
Titanium (Ti)	47	0.61	0.51	[O ₂]
Vanadium (V)	51	0.03	0.01	[NH ₃]
Zinc (Zn)	66	< DL	0.48	[Warm NH ₃]
Silicon (Si)	28	198.65*	4.98	[H ₂]

DL: Detection limit. *Silicon is known to be difficult to measure by ICP-MS. When measured by GF-AAS, concentration was < DL (0.5 µg/L). Refer to the Milli-Q® IQ Element Datasheet for detailed experimental methods and additional results.

IC analyses of ultrapure water

Ion	Sample (ng/L)	DL (ng/L)
Ammonium	≤ DL	0.1
Bromide	≤ DL	0.4
Chloride	≤ DL	0.1
Fluoride	≤ DL	0.05
Nitrate	≤ DL	0.4
Nitrite	≤ DL	0.2
Phosphate	≤ DL	0.2
Sulfate	≤ DL	0.4

DL: Detection limit. Data obtained using a Thermo Scientific™ Dionex™ ICS 5000+ instrument.



Water Purification Solutions

Cat. No.

Milli-Q® IQ 7003/05/10/15 Ultrapure & Pure Water System
Consistent quality ultrapure and pure water from tap water

ZIQ7005T0C

Milli-Q® IQ 7000 Ultrapure Water System
Consistent quality pure water from purified water

ZIQ7000T0C

Milli-Q® IQ Element Water Purification and Dispensing Unit
Ultrapure water for trace and ultra-trace elemental analysis

ZIQELEMENT0

Milli-Q® IQ 7000 + Milli-Q® IQ Element Device Feed Solution
For continuous feed to ICP-MS auto-samplers

ZIQ7DFEED

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