Milli-Q®
Lab Water Solutions

Data Sheet

EDS-Pak®
Point-of-Use Polisher

Endocrine disruptor-free water at the ultrapure water point of delivery

Key benefits:

- Point-of-use polisher for use with Milli-Q® IQ series water purification systems
- Final purification step provides endocrine disruptor-free ultrapure water at high flow rate when you need it
- Delivers up to 300 L of endocrine disruptor-free ultrapure water
- Validated for efficient removal of bisphenol A, diethylhexyl phthalate, di-n-butyl phthalate and nonylphenol
- Each EDS-Pak® cartridge is delivered with a Certificate of Quality
- e-Sure tag for RFID connection with Q-POD® dispenser enables full data traceability and consumable status monitoring on the POD's touchscreen interface



Endocrine disruptors

Endocrine disruptors (EDs) are small, man-made organic chemicals whose structures mimic those of hormones, enabling them to interact with normal endocrine system functions. By sheer coincidence, these key-shaped molecules open the hormonal locks that control proper development and behavior in both humans and animals.[1-3]

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The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

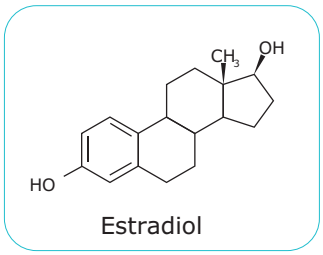
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Today, endocrine disruptors are increasingly present in the environment. Although endocrine disruptors may be only somewhat dangerous for adults, mounting evidence suggests that they can significantly disturb fetal and infant development.

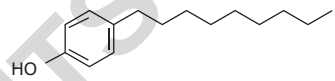
As researchers increasingly focus on the effects of these chemicals, there is a need for endocrine disruptor-free water for use in experimental tests. While conventional water purification techniques remove the bulk of organic compounds from ultrapure water, some trace organics may still remain.

These man-made chemicals can be found in many products widely used in industrial societies:

- Bisphenol A is a plasticizer used in reusable water bottles, laptop computer housings, dental sealants and the resins in some food can linings.
- Phthalates are found in a wide variety of products, including vinyl flooring, food packaging, blood-storage bags, intravenous medical tubing, as well as many health and beauty products, such as detergents, soaps, shampoos, deodorants, fragrances, hair spray and nail polish. They are often used as a plasticizer in PVC pipes distributing water in buildings.

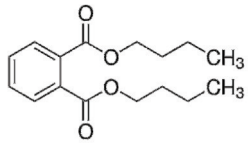


Estradiol

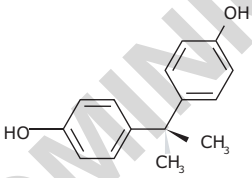


Nonylphenol

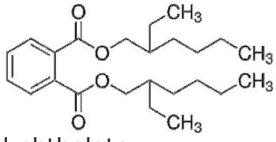
Examples of man-made chemicals with estrogeno-mimetic structure



Di-n-butyl phthalate



Bisphenol A



Diethylhexyl phthalate

Examples of endocrine disruptors include nonylphenol (a detergent), bisphenol A, di-n-butyl phthalate and diethylhexyl phthalate (all plasticizers).

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EDS-Pak® polisher design

The EDS-Pak® polisher is a disposable point-of-use ultrafiltration cartridge developed to meet the needs of researchers who require ultrapure water free of endocrine disruptors.

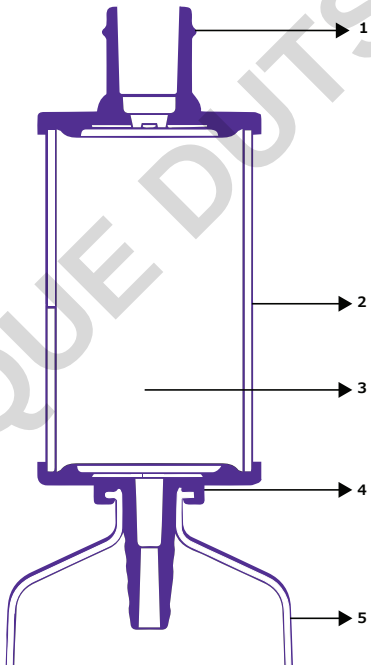
The polisher can be installed on all Milli-Q® IQ series water purification systems, which deliver ultrapure water with TOC < 5 ppb. It is designed to provide up to 300 L of endocrine disruptor-free water when fed with ultrapure water.

EDS-Pak® polisher operation

The EDS-Pak® cartridge contains a specific type of activated carbon that has been validated for the removal of several endocrine disruptors.

Before use, the EDS-Pak® polisher must be conditioned with high-grade methanol to ensure that all binding surfaces are accessible to endocrine disruptors.

Following this step, the cartridge should then be flushed with ultrapure water to remove any excess methanol. Once conditioned, the EDS-Pak® unit is warranted to deliver up to 300 L of EDs-free water (see specifications below) when fed by ultrapure water with a TOC level < 5 ppb at a flow rate between 0.5 – 2 L/min.



1. Redesigned Luer type inlet connection for easy insertion at the Q-POD® outlet.
2. Polypropylene tube.
3. EDs-specific Activated Carbon.
4. Redesigned outer Luer with inner hose barb connection.
5. Protective bell

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EDS-Pak® polisher specifications

The EDS-Pak® polisher has been validated for the efficient removal of the following endocrine disruptors: bisphenol A, diethylhexyl phthalate, di-n-butyl phthalate and nonylphenol.

EDs tested	Feed (µg/L)	Product (ng/L)	Volume (L)	Flow (L/min)
Bisphenol A	Up to 4.4	< 10 (QL = 10)	300	0.5 – 2.0
Diethylhexyl phthalate	Up to 1.3	< 200 (QL = 200)	300	0.5 – 2.0
Di-n-butyl phthalate	Up to 1.5	< 200 (QL = 200)	300	0.5 – 2.0
Nonylphenol	Up to 3.3	< 100 (QL = 100)	300	0.5 – 2.0

QL: quantitation limit

Each EDS-Pak® cartridge is delivered with a Certificate of Quality showing the analytical results of the Endocrine Disruptor Analysis performed on the cartridge lot.

Ordering information

Description	Cat. No.
EDS-Pak® Cartridge (1/pk) delivered hermetically sealed, with a Certificate of Quality	**EDSPAK0A1**

Note: A 50 mL glass syringe is required to condition the EDS-Pak® cartridge with methanol. The syringe and high-grade methanol should be purchased separately.

Bibliography

1. Huang YW, Twidwell DL, Elrod JC. Occurrence and Effects of Endocrine Disrupting Chemicals in the Environment. *Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management*. 2003:7(4):241-7.
2. Brevini TAL, Zanetto SB, Cillo, F. Effects of Endocrine Disruptors on Developmental and Reproductive Functions. *Curr Drug Targets Immune Endocr Metabol Disord*. 2005:5(1):1-10.
3. Bigsby R, Chapin RE, Daston GP, et al. Evaluating the Effects of Endocrine Disruptors on Endocrine Function during Development. *Environ Health Perspect*. 1999:107(S4):613-8.

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Merck KGaA
Frankfurter Strasse 250
64293 Darmstadt, Germany

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