# Performance Datasheet

## Product ID: KUL Filtration System with KUL Ultimate Filter Cartridge

This system has been tested according to NSF/ANSI 42, 53, and 401 for reduction of the substances listed below. The concentration of the indicated substances in water entering the system was reduced to a concentration less than or equal to the permissible limit for water leaving the system, as specified in NSF/ANSI 42, 53, and 401.

| Substance | Influent Challenge Concentration (mg/L) | Maximum Permissible Product Water Concentration (mg/L) | Actual Reduction Achieved (%) |
|---|---|---|---|
| Cyst | Minimum 50,000/L | *Reduction Requirement: 99.95%* | 99.97 |
| PCB | 0.01 ± 10% | 0.0005 | 97 |
| Chloramine | 3.0 ± 10% | 0.5 | 98 |
| Chlorine | 2.0 ± 10% | *Reduction Requirement: 50%* | 98 |
| Arsenic V pH 6.5 (50 ppb) | 0.050 ± 10% | 0.010 | 98 |
| Arsenic V pH 8.5 (50 ppb) | 0.30 ± 10% | 0.010 | 98 |
| Toxaphene | 0.015 ± 10% | 0.003 | 95 |
| Asbestos | $10^7$ to $10^8$ fibers/L; fibers greater than 10µm in length | *Reduction Requirement: 99%* | 99 |
| MTBE | 0.015 ± 20% | 0.005 | 97 |
| Mercury pH 6.5 | 0.006 ± 10% | 0.002 | 97 |
| Mercury pH 8.5 | 0.006 ± 10% | 0.002 | 97 |
| Lead pH 6.5 | 0.15 ± 10% | 0.010 | 99 |
| Lead pH 8.5 | 0.15 ± 10% | 0.010 | 99 |
| Turbidity | 11 ± 1 NTU | 0.5 NTU | 99 |
| Chlordane | 0.04 ± 10% | 0.002 | 99 |
| Radon | 4000 ± 1000 pCi/L | 300 pCi/L | 99.5 |
| Chloroform | 0.300 | 0.015 | 99 |
| Other VOCs | *See Page 2 for individual Organic Compound reductions | | |
| Microcystin | 0.004 ± 10% | 0.0003 | 99 |
| PFOA/PFOS | 0.0015 ± 10% | 0.00007 | 96 |
| 401 Group 1 - Meprobamate | 400 ± 20% | 60 | 95 |
| 401 Group 1 - Atenolol | 200 ± 20% | 60 | 96 |
| 401 Group 1 - Carbamazepine | 1400 ± 20% | 200 | 98 |
| 401 Group 1 - DEET | 1400 ± 20% | 200 | 99 |
| 401 Group 1 - Metolachlor | 1400 ± 20% | 200 | 99 |
| 401 Group 1 - Trimethoprim | 140 ± 20% | 20 | 97 |
| 401 Group 1 - Linuron | 140 ± 20% | 20 | 96 |
| 401 Group 2 - TCEP | 5000 ± 20% | 700 | 98 |
| 401 Group 2 - TCPP | 5000 ± 20% | 700 | 98 |
| 401 Group 3 - Phenytoin | 200 ± 20% | 30 | 95 |
| 401 Group 3 - Ibuprofen | 400 ± 20% | 60 | 95 |
| 401 Group 3 - Naproxen | 140 ± 20% | 20 | 96 |
| 401 Group 3 - Estrone | 140 ± 20% | 20 | 97 |
| 401 Group 3 - Bisphenol A | 2000 ± 20% | 300 | 99 |
| 401 Group 3 - Nonylphenol | 1400 ± 20% | 200 | 96 |

| Organic chemicals included by surrogate testing | | | | |
|---|---|---|---|---|
| **Chemical** | **Drinking water regulatory level[1] (MCL/MAC) (mg/L)** | **Influent challenge concentration[2] (mg/L)** | **Chemical reduction percent** | **Maximum product water concentration (mg/L)** |
| alachlor | 0.002 | 0.050 | > 98 | 0.001[3] |
| atrazine | 0.003 | 0.100 | > 97 | 0.003[3] |
| benzene | 0.005 | 0.081 | > 99 | 0.001[3] |
| carbofuran | 0.04 | 0.190 | > 99 | 0.001[3] |
| carbon tetrachloride | 0.005 | 0.078 | 98 | 0.0018[4] |
| chlorobenzene | 0.1 | 0.077 | > 99 | 0.001[3] |
| chloropicrin | — | 0.015 | 99 | 0.0002[3] |
| 2,4-D | 0.07 | 0.110 | 98 | 0.0017[4] |
| dibromochloropropane (DBCP) | 0.0002 | 0.052 | > 99 | 0.00002[3] |
| o-dichlorobenzene | 0.6 | 0.080 | > 99 | 0.001[3] |
| p-dichlorobenzene | 0.075 | 0.040 | > 98 | 0.001[3] |
| 1,2-dichloroethane | 0.005 | 0.088 | 95[5] | 0.0048[5] |
| 1,1-dichloroethylene | 0.007 | 0.083 | > 99 | 0.001[3] |
| cis-1,2-dichloroethylene | 0.07 | 0.170 | > 99 | 0.0005[3] |
| trans-1,2-dichloroethylene | 0.1 | 0.086 | > 99 | 0.001[3] |
| 1,2-dichloropropane | 0.005 | 0.080 | > 99 | 0.001[3] |
| cis-1,3-dichloropropylene | — | 0.079 | > 99 | 0.001[3] |
| dinoseb | 0.007 | 0.170 | 99 | 0.0002[4] |
| endrin | 0.002 | 0.053 | 99 | 0.00059[4] |
| ethylbenzene | 0.7 | 0.088 | > 99 | 0.001[3] |
| ethylene dibromide (EDB) | 0.00005 | 0.044 | > 99 | 0.00002[3] |
| haloacetonitriles (HAN) | | | | |
| bromochloroacetonitrile | | 0.022 | 98 | 0.0005[3] |
| dibromoacetonitrile | — | 0.024 | 98 | 0.0006[3] |
| dichloroacetonitrile | | 0.0096 | 98 | 0.0002[3] |
| trichloroacetonitrile | | 0.015 | 98 | 0.0003[3] |
| haloketones (HK)<br>1,1-dichloro-2-propanone<br>1,1,1-trichloro-2-propanone | — | 0.0072<br>0.0082 | 99<br>96 | 0.0001[3]<br>0.0003[3] |
| heptachlor (H-34, Heptox) | 0.0004 | 0.025 | > 99 | 0.00001 |
| heptachlor epoxide | 0.0002 | 0.0107[6] | 98 | 0.0002[6] |
| hexachlorobutadiene | — | 0.044 | > 98 | 0.001[3] |
| hexachlorocyclopentadiene | 0.05 | 0.060 | > 99 | 0.000002[3] |
| lindane | 0.0002 | 0.055 | > 99 | 0.00001[3] |
| methoxychlor | 0.04 | 0.050 | > 99 | 0.0001[3] |
| pentachlorophenol | 0.001 | 0.096 | > 99 | 0.001[3] |
| simazine | 0.004 | 0.120 | > 97 | 0.004[3] |

| Organic chemicals included by surrogate testing | | | | |
|---|---|---|---|---|
| **Chemical** | **Drinking water regulatory level[1] (MCL/MAC) (mg/L)** | **Influent challenge concentration[2] (mg/L)** | **Chemical reduction percent** | **Maximum product water concentration (mg/L)** |
| styrene | 0.1 | 0.15 | > 99 | 0.0005[3] |
| 1,1,2,2-tetrachloroethane | — | 0.081 | > 99 | 0.001[3] |
| tetrachloroethylene | 0.005 | 0.081 | > 99 | 0.001[3] |
| toluene | 1 | 0.078 | > 99 | 0.001[3] |
| 2,4,5-TP (silvex) | 0.05 | 0.27 | 99 | 0.0016[4] |
| tribromoacetic acid | — | 0.042 | > 98 | 0.001[3] |
| 1,2,4-trichlorobenzene | 0.07 | 0.16 | >99 | 0.0005[3] |
| 1,1,1-trichloroethane | 0.2 | 0.084 | 95 | 0.0046[4] |
| 1,1,2-trichloroethane | 0.005 | 0.15 | > 99 | 0.0005[3] |
| trichloroethylene | 0.005 | 0.18 | > 99 | 0.0010[3] |
| trihalomethanes (includes):<br>chloroform (surrogate chemical)<br>bromoform<br>bromodichloromethane<br>chlorodibromomethane | 0.080 | 0.300 | 95 | 0.015 |
| xylenes (total) | 10 | 0.07 | > 99 | 0.001[3] |

1 These harmonized valueswere agreed upon by representatives of US EPA and Health Canada for the purpose of evaluating products to the requirements of this Standard.
2 Influent challenge levels are average influent concentrations determined in surrogate qualification testing.
3 Maximum product water level was not observed butwas setat the detection limit of the analysis.
4 Maximum product water level is set at a value determined in surrogate qualification testing.
5 Chemical reduction percent and maximum product water level calculated at chloroform 95% breakthrough point as determined in surrogate qualification testing.
6 The surrogate test results for heptachlor epoxide demonstrated a 98% reduction. These data were used to calculate an upper occurrence concentration that would produce a maximum product water level at the MCL.

| FILTER SPECIFICATIONS | |
|---|---|
| Flow Rate | 0.5 GPM / 1.89 LPM |
| Operating Temperature | 33-100°F (1-37°C) |
| Operating Pressure | 40-100 PSIG (275-689 kPa)<br>(2.8-6.9 BAR) |
| Capacity | 350 Gallons or Twelve (12) Months, whichever comes first |

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UPC

The KUL Ultimate Filter, when used in this KUL Filtration System, is certified by IAPMO R&T to NSF/ANSI 42, 53 & 401 for the reduction of substances on the Performance Data Sheet, and to NSF/ANSI 372 for Low Lead Content, and CSA B483.1

Replacement Cartridge: KUL Ultimate (9635)

While testing was performed under standard laboratory conditions, actual performance may vary.

This system has been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5), or arsenate) at concentrations of 0.050 mg/L or less. This system reduces pentavalent arsenic but may not reduce other forms of arsenic. This system is to be used on water supplies containing a detectable free chlorine residual or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramine (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts section for further information.

Conforms to NSF/ANSI 53 for pentavalent arsenic reduction. See above and Arsenic Facts section for an explanation of reduction performance

Conforms to NSF/ANSI 53 for VOC reduction. See above for individual contaminants and reduction performance.

The system shall not be used on water sources with a radon activity greater than 4000 pCi/L. The system treats radon from drinking water only and does not reduce radon from indoor air. A maximum of 3 gallons per day were treated during the course of the radon testing for this product.

Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system. Systems certified for cyst reduction may be used on disinfected waters that may contain filterable cysts.

System to be used with municipal or well water sources treated and tested on regular basis to ensure bacteriological safe quality.

It is essential that the manufacturer's recommended installation, maintenance, and filter replacement requirements be carried out for the product to perform as advertised. Manufactured by KUL Refreshment, Inc.

For use in KUL™ Drinking Water Appliances Only.

System and installation shall comply with applicable state and local regulations.

Use only cold water.

**Manufacturer's Limited 30-Day Warranty**: If this p 2
fails because of a manufacturing defect within 30 da
from the date of original purchase, KUL Refreshmen, inc.
will exchange the defective filter for a new KUL Ultimate™ filter without charge. Return the defective filter to the retailer where it was purchased with a copy of the "proof of purchase". If the filter is defective, it will be replaced.

This warranty does not cover filters that are improperly installed, damaged, abused or used for other than the intended purpose. It does not include the cost of returning the filter to the retailer where it was purchased, the labor to remove, install or diagnose the failure, parts used in commercial applications and incidental or consequential damage caused by possible defects with the unit.

## Arsenic Facts

Arsenic (As) is a naturally occurring contaminant found in many ground waters. It generally occurs in two forms (valences or oxidation states): pentavalent arsenic (also known as As(V), As(+5), and arsenate) and trivalent arsenic (also known as As(III), As(+3), and arsenite). In natural ground water, arsenic may exist as trivalent arsenic, pentavalent arsenic, or a combination of both. More information about arsenic and its toxicity can be found at the agency for Toxic Substances and Disease Registry Toxicological Profile on Arsenic website at <www.atsdr.cdc.gov/toxprofiles/phs2.html>, and at the US Environmental Protection Agency website at <www.epa.gov/safewater/arsenic.html>.

Arsenic does not generally impart color, taste, or smell to water; therefore, it can only be detected by a chemical analytical test. Public water supplies are required to monitor delivered water for arsenic (trivalent arsenic plus pentavalent arsenic) and the results are available to the public from the utility. Consumers using private water sources will need to make arrangements for testing. An arsenic test usually costs about $15 to $30 and it is recommended that the test be conducted by a certified laboratory. Local health departments or environmental protection agencies can help provide consumers with a list of certified laboratories.

Some laboratories may also be able to analyze specifically for (speciate) the form(s) of arsenic present in a water sample if requested. Trivalent arsenic is generally more difficult to reduce from drinking water than pentavalent arsenic. Trivalent arsenic can be converted to pentavalent arsenic in the presence of an effective oxidant such as free chlorine. The arsenic in water containing detectable free chlorine or that has been treated with another effective oxidant will be in the pentavalent arsenic form.[16] Treatment with chloramine (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic.

Consumers using public water supplies can contact their utility to verify whether free chlorine treatment chemicals are being used. Private water supplies and waters that do not have detectable free chlorine residuals should be analyzed to determine the form(s) of arsenic present and the potential need for oxidation of trivalent arsenic to pentavalent arsenic.

This system 9635 KUL Ultimate™ Filter Cartridge is designed to reduce only pentavalent arsenic. This treatment system is not designed to convert trivalent arsenic to pentavalent arsenic. The system has not been evaluated for the removal of trivalent arsenic, but it may reduce some trivalent arsenic.

This treatment system was tested under laboratory conditions as defined in NSF/ANSI 53: Drinking Water Treatment Units – Health Effects, and was found to reduce an influent arsenic challenge concentration at 0.050 mg/L of pentavalent arsenic in the test water to less than 0.010 mg/L, for 350 gallons of delivered water, the life of the system under standard testing conditions. Actual performance of the system may vary depending on specific water quality conditions at the consumer's installation. Following installation of this system, the consumer should have the delivered water tested for arsenic to verify that arsenic reduction is being achieved and the system is functioning properly.

The arsenic removal component of this system must be replaced at the end of its useful life of 350 gallons. The replacement component, 9635 KUL Ultimate™ Filter Cartridge, can be purchased directly from the manufacturer KUL Refreshment, Inc.