

# MATRIKX®

## EXTRUDED CARBON FILTERS

# 5

**MATRIKX® 5** extruded carbon filters offer high levels of chemical adsorption, including VOCs, while removing chlorine and chemicals that contribute to taste and odor. **MATRIKX® 5** filters provide 5 µm absolute particulate filtration and extended life as a fine sediment filter. **MATRIKX® 5** filters flow in the radial (outside- to-inside) direction, providing increased dirt capacity and low pressure drop. Unlike granular activated carbon (GAC) filters, **MATRIKX® 5** filters will not channel or bypass, due to the extreme uniformity of their extruded activated carbon core.

Service life of the **MATRIKX® 5** filter is greatly extended by an outer layer of 15 µm prefiltration medium and will operate effectively in most installations without prefiltration.

**Function:** removal of chlorine, volatile organic compounds (VOCs), chlorinated hydrocarbons, particulates, and dissolved organic impurities from water, aqueous solutions or suspensions, and many organic solvents (call KX Industries for advice regarding non-aqueous applications).

**Applications:** residential and industrial water purification systems, industrial effluent water treatment, food service, pre- and post-RO systems, industrial makeup, product rinse, and process water.

#### **Features:**

- Fine-mesh and granular carbon in high-integrity bonded structure
- 10 µm Absolute Filtration.
- Integral Extruded Construction.
- Custom Designs Available.

#### **Benefits:**

- High Chemical Adsorptive Capacity.
- High Adsorptive Efficiency.
- High VOC Reduction.
- High TOC Reduction
- High Turbidity Reduction.
- No Channeling/No Fluidizing/No Bypassing.
- Maximum Service Life.
- No Release of Carbon Fines.
- Residential & Industrial Applications.



# Chlorine Reduction

**Test Results:** Standard 2.50" O.D. x 1.25" I.D. x 9.75" L. **MATRIX®5** extruded carbon filters removed all detectable free chlorine (<0.05 ppm) from an influent containing 2-2.5 ppm free chlorine flowing continuously at 1 gpm, and maintained this level of removal for a total flow of 3,500 gallons. A free chlorine reduction efficiency of 90% was maintained even after a total flow of 6,000 gallons.

**Test Conditions:** Two randomly selected, standard production cartridges were evaluated for chlorine reduction.

Flow: 1 gpm, constant.

System Pressure: 60 psi, constant.

Prefiltration: 0.2 µm absolute.

Influent water: 250 gallon batches.

Chlorine challenge: sodium hypochlorite @ 2-2.5 ppm FAC (free available chlorine).

Analysis: Standard methods for the examination of water and wastewater method number 4500-Cl G, used to analyze both influent and effluent water.

Total challenge: 6,000 gallons. Influent water analysis:

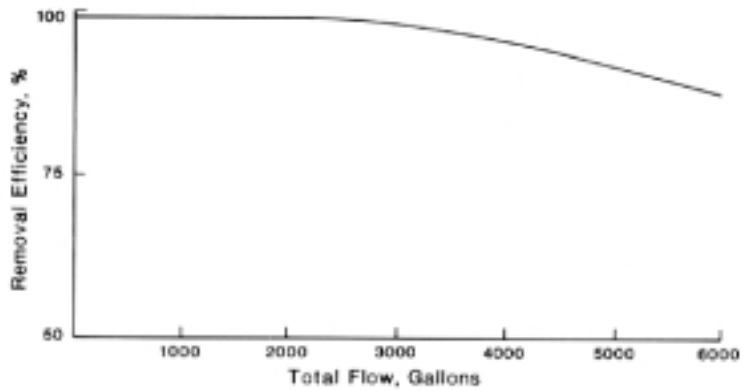
Turbidity: <1.0 NTU, Hardness: 171 mg/L

Prefiltered with 2.0 µm absolute prefilter. Alkalinity: 26.8 mg/L.

Temperature: 21°C

pH: 7.6

TDS: 200 mg/L



Source of test data: Spectrum Laboratories, New Brighton, Minnesota.

# Flow Resistance

**Test Results:** Standard 2.50" O.D. x 1.25" I.D. x 9.75" L. **MATRIX®5** extruded carbon filters were tested with municipal tap water from Bridgeport, CT, at 60 psig system pressure, to determine differential-pressure vs. flow curves. The standard **MATRIX®5** filters have a  $\Delta P=1.10$  psid at 1.0 gallon per minute flow.

**Test Conditions:** Three randomly selected, standard production cartridges were subjected to varying flows to determine the initial-differential-pressure vs. flow curve.

Influent water: Bridgeport, CT municipal water. pH of Influent water: 6.3-6.5.

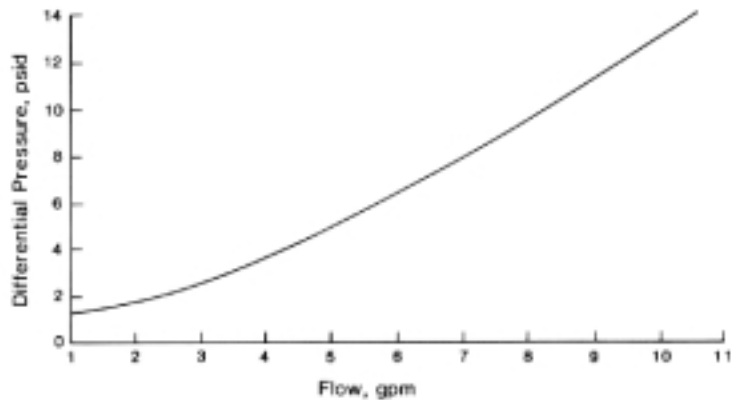
Temperature: 16°C.

System Pressure: 60 psig, constant.

Range of tested flows: 1-9 gpm.

Instrumentation: Omega Engineering FL710 Series, 1 to 11 gpm range, with 0.2 gpm accuracy.

Orange Research, Inc. differential pressure gauges, 0 to 40 psid.



Source of test data: KX Industries, LP, Bridgeport, CT.

# Chloroform Reduction

**Test Results:** Standard **MATRIKX® 5** 2.50" O.D. x 1.25" I.D x 9.75"L. extruded carbon filter cartridges were tested at flows of 0.5 and 1.0 gpm, with an average influent challenge of 300 ppb chloroform. The **MATRIKX® 5** cartridges removed >95% of influent chloroform greater than 250 gallons at 1.0 gpm, and for approximately 500 gallons at 0.5 gpm.

**Test Conditions:** Two randomly selected production cartridges were evaluated for chloroform reduction at each flow rate.

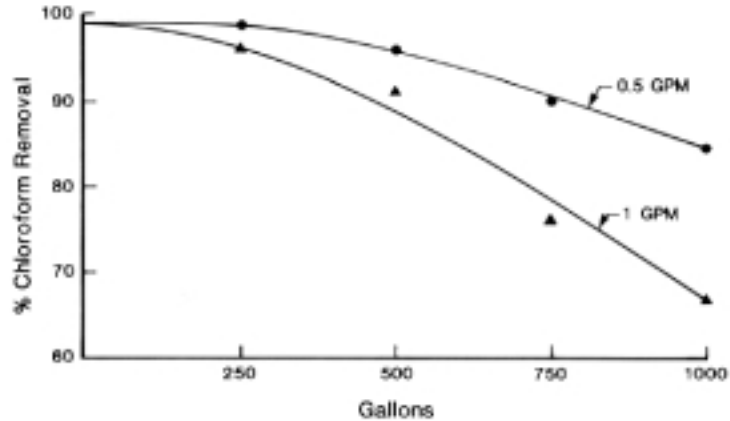
Flow rate: 0.5 gpm and 1.0 gpm.

System Pressure: 60 psig.

Average Influent chloroform: 300 ppb

Influent water analysis:

Turbidity: <1.0 NTU,	Hardness: 171 mg/L
Prefiltered with	Alkalinity: 257
0.2 µm absolute	Temperature:
prefilter.	21° ± 2° c.
pH: 7.5 ± 0.5	Phosphate:
TDS: 213 mg/L	1.3 mg/L.



Source of test data: Spectrum Laboratories, New Brighton, Minnesota.

# Particulate Removal

**Test Results:** Five standard 2.50" O.D. x 1.25" I.D. x 9.75" L. **MATRIKX® 5** extruded carbon filters were tested for particulate removal with two different particle counting instruments and demonstrated greater than 99% particle removal at 10 µm and > 95% removal at 5µm.

**Test Conditions #1:** Performed by KX Industries, LP.

Instrumentation: Met One ; dual sensor laser counting system, model 233-S157;

Sensor: solid-state laser diode.

Instrument capability: 2 µm to 200 µm.

Influent water temperature: 24°C.

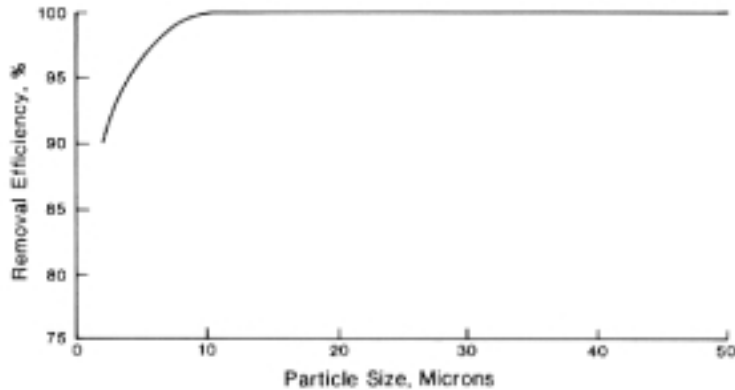
Challenge: 1,500 particles/ml influent, size range:

2 µm to 50 µm. Flow: 1

gpm, constant. Sensor flow

rate: 50 ml/min.

Particle removal assay: performed at 30 minutes after start of flow through filter element.



Source of test data: KX Industries, LP, Bridgeport, CT.

**Test Conditions #2:** Performed by third party testing laboratory.

Test method: single pass retention efficiency per IBR TM E-100.

Instrumentation: Hiac 4200, LAS 346 counter.

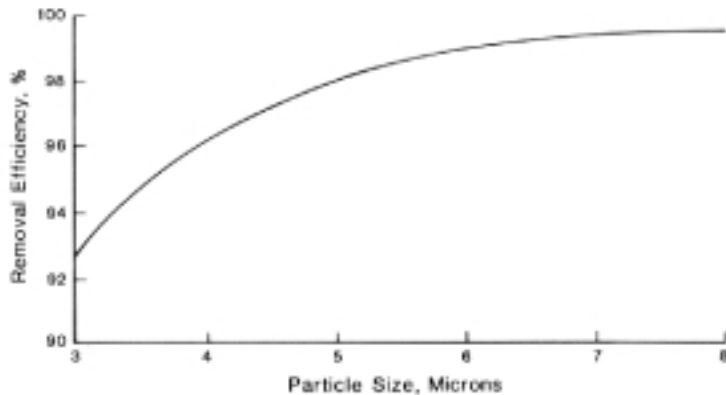
Hach 2100A sensor elements. Fluid: deionized water.

Contaminant: AC fine test dust, LN 1538.

Temperature: ambient

Flow rate: 1 gpm, continuous

Description of samples: filter elements, preflushed for 15 minutes.



Source of test data: Inter Basic Resources, Inc. Ann Arbor, Michigan.

# TABLE 1: SUMMARY TECHNICAL DATA

Part Number	O.D x Length	Carbon Weight <sup>1</sup>	Chlorine capacity @ Flow <sup>2</sup>	Absolute $\mu$ m rating <sup>3</sup>	Chlorine capacity @ Flow <sup>4</sup>	Initial $\Delta$ P @ Flow
02-250-125-975	2.50" x 9.75"	0.75 lb.	> 6,000 gal. @ 1.0 GPM	5 $\mu$ m	500 gal. @ .50 GPM	1.0 psid @ 1.0 GPM
02-250-125-20	2.50" x 20"	1.75 lb.	> 15,000 gal. @ 2.3 GPM	5 $\mu$ m	1,250 gal. @ 1.2 GPM	1.0 psid @ 2.0 GPM
02-425-125-975	4.25" x 9.75"	2.60 lb.	> 20,000 gal. @ 3.0 GPM	5 $\mu$ m	1,750 gal. @ 1.5 GPM	4.5 psid @ 3.0 GPM
02-425-125-20	4.25" x 20"	5.60 lb.	> 42,000 gal. @ 7.0 GPM	5 $\mu$ m	3,500 gal. @ 3.5 GPM	5.0 psid @ 7.0 GPM

## Notes: TABLE 1

<sup>1</sup>Performance of a given **MATRIKX**® extruded carbon filter varies in direct proportion to the total weight of carbon in each filter. For example, a 4.25" O.D. x 20" L. **MATRIKX**® filter contains approximately seven times as much activated carbon as a 2.50" O.D. x 9.75" L. **MATRIKX**® filter, and will therefore have seven times the rated chlorine and chloroform capacities, when operating at seven times the rated flow of the smaller cartridge. Hence, rated flow is based on maintaining identical contact/residence times for all filters.

<sup>2</sup>Chlorine capacity is the estimated capacity in gallons during which the filter will remove greater than 95% of the influent chlorine (2ppm) when operating continuously at the given flow.

<sup>3</sup>Particulate rating is for >99.9% removal of particles of a given size as determined from particle counting results.

<sup>4</sup>Chloroform removal capacity, in gallons total flow to maintain minimum >95% removal of influent chloroform (300 ppb) at the given flow.

## Warnings:

- Maximum Operating Temperature: 125° F.
- Maximum Operating Pressure: 250 psig.
- Maximum Differential Pressure: 100 psid.
- Collapse Pressure: 200 psid.
- **MATRIKX**® filters are not to be autoclaved or steam sterilized.
- Activated carbon filter units covered by this standard are not intended to be used where the water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit.
- Use **MATRIKX**® carbon filters only with microbiologically safe water. Activated carbon filters are not designed to kill or remove bacteria or viruses.
- Actual results obtained will vary with various combinations and amounts of organic contaminants, changes in pH or other conditions encountered in actual use.
- All information presented here is based on data believed to be reliable. It is offered for evaluation and verification, but is not to be considered a warranty of any kind.
- **MATRIKX**® filters are designed to fit most standard household and commercial or industrial housings. Call KX Industries to check filter and housing compatibility.

## Ordering Information **MATRIKX**® 5 Extruded Carbon Filters

Part Number	Outer Diameter	Length
02-250-125-975	2.50"	9.75"
02-250-125-20	2.50"	20.00"
02-425-125-975	4.25"	9.75"
02-425-125-20	4.25"	20.00"
Special Order	1" to 6"	1" to 60"

Standard filters are finished with an outer prefiltration medium. A protective polypropylene netting is applied to the exterior of the cartridge. Polypropylene end caps with compression gaskets fit most standard housings.

Inquire concerning alternative filter finishing options, including alternative end cap and housing interface styles, a wide range of non-standard extruded filter sizes, and non-standard prefiltration systems.

SOLE RESPONSIBILITY OF BUYER. USE OF THIS PRODUCT CONSTITUTES BUYER'S ACCEPTANCE OF THIS LIMITED LIABILITY.

### LIMITED LIABILITY

SELLER MAKES NO WARRANTIES OF ANY KIND, EXPRESSED OR IMPLIED, CONCERNING THIS PRODUCT, INCLUDING WARRANTIES OF THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXCEPT THAT THIS PRODUCT SHOULD BE CAPABLE OF PERFORMING AS DESCRIBED IN THE APPROPRIATE PRODUCT DATA SHEET. SELLER'S OBLIGATION SHALL BE LIMITED SOLELY TO REFUND OF PURCHASE PRICE OR REPLACEMENT OF PRODUCT PROVED DEFECTIVE, AT SELLER'S SOLE DISCRETION. DETERMINATION OF SUITABILITY OF PRODUCT FOR USES AND APPLICATIONS CONTEMPLATED BY BUYER SHALL BE THE

This product is made in accordance with or covered under one or more of the following United States patents: 5,019,311; 5,147,722; 5,189,092; 5,249,948; 5,331,037; 5,922,803; 5,946,342; 6,061,384 and corresponding patents in other countries.

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