

FILTRATION MEDIA



CMX™

100% CERAMIC FILTER MEDIA FOR 1 TO 5 MICRON FILTRATION

CMX™ is manufactured in kilns in a tightly controlled process that allows a variety of choices for your filtration requirements. Unlike natural zeolites or sand, each grade of our CMX material (M1 and M2) is precision engineered with a 1.25 typical uniformity coefficient to provide the right media for the right application — be it residential, commercial, or municipal.

The result? The best of all worlds. High volume throughputs, the finest in micron particulate filtration, and ultra-low backwash requirements. *The cost savings are huge!* Smaller and fewer tanks are needed per system. Smaller pump requirements mean less wasted backwash water and lower operating costs, while producing superior clarity. And because CMX is ceramic, it withstands heat, chemicals, abrasion, and pressure shock — meaning bed replacement is rare.

Designed for flow rates of 6 to 12 gpm per sq.ft. with a short 24 inch bed depth, CMX is capable of filtering particles as small as 1 micron with very little pressure loss.

CMX also forms a critical barrier to cyst contaminants like Giardia and Cryptosporidium. It can remove significantly more cyst-based contaminants than other conventional aggregate media.

Available in two different mesh sizes and molecular weights, CMX can serve as its own underbedding or pre-filtration.

CMX is considered inert and non-reactive and is compatible with acid, caustic, and all types of oxidants. CMX can be used in harsh industrial filtration applications, chemical filtration, and in high temperature processes up to 1000°F (538°C).

CMX media is extremely clean with virtually no dust.

FEATURES

- Sediment Filtration
- Turbidity and Silt Reduction
- Oxidized Iron and Manganese Filtration
- Giardia and Cryptosporidium Removal
- Certified Arsenic Removal
- Cleanable and Sanitizable
- Certified to NSF/ANSI Standard 61

Physical Properties

Material	Fired ceramic
Color.....	Tan
Surface Characteristics	Highly textured
Shape	Spherical
Uniformity Coefficient.....	< 1.4 (1.25 typical)
Bulk Density.....	106 lb/cu.ft.
Specific Gravity	3.0
Acid Solubility.....	< 1% (0.1% typical)
Surface Area.....	9,677 sq.ft./cu.ft.
Moh's Hardness	7.0
Sphericity.....	0.96
Friability.....	< 1% (± 0.5%)

Applications include industrial filtering, municipal water works, commercial process water, pressure filters, surface water, ground water..

Packaging

1/2 cu.ft. box (53 lb) or 20 cu.ft. supersack (2,120 lb)

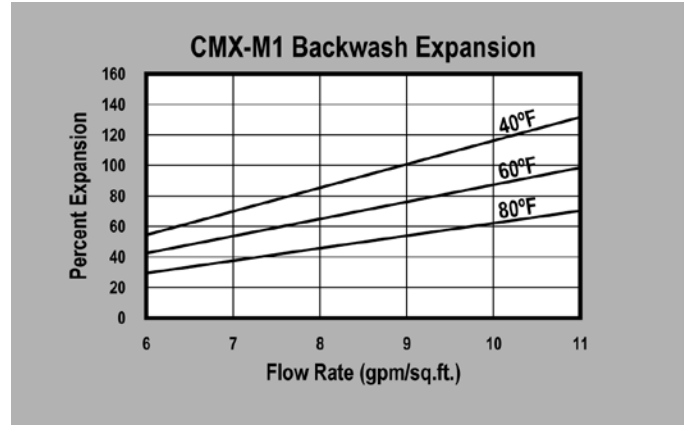
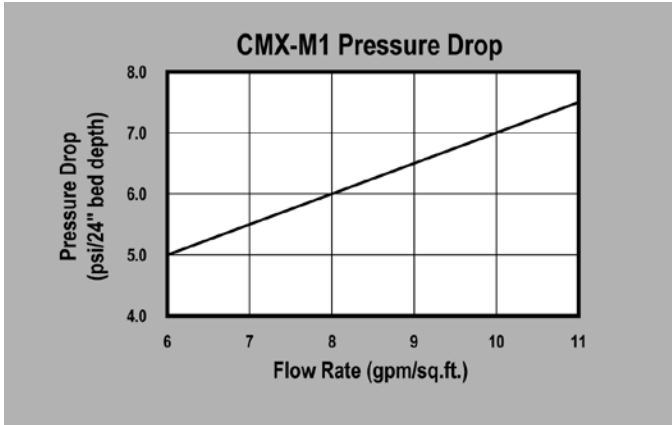
Part Number	Applications	Nominal Micron Rating	Effective Size	Mesh Size	Recommended Backwash Rate
CMX-M1	Pressure Filters, Surface Water, GWUDI	3	0.15 mm to 0.25 mm	60 x 80	8 gpm/sq.ft.
CMX-M2	Pressure Filters, Fe, Mn, As, Silt/TSS	5	0.24 mm to 0.35 mm	40 x 60	10 gpm/sq.ft.

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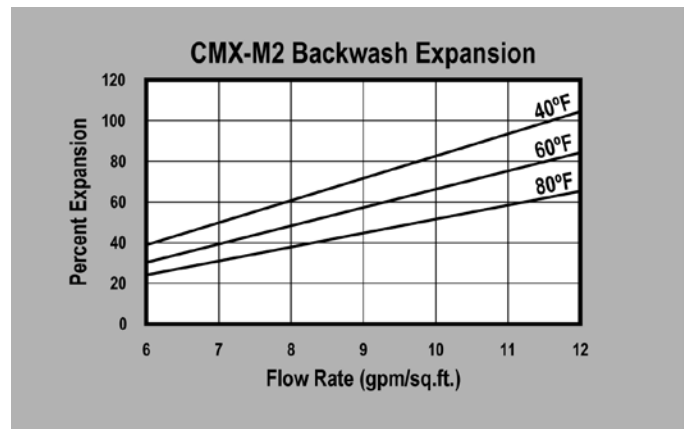
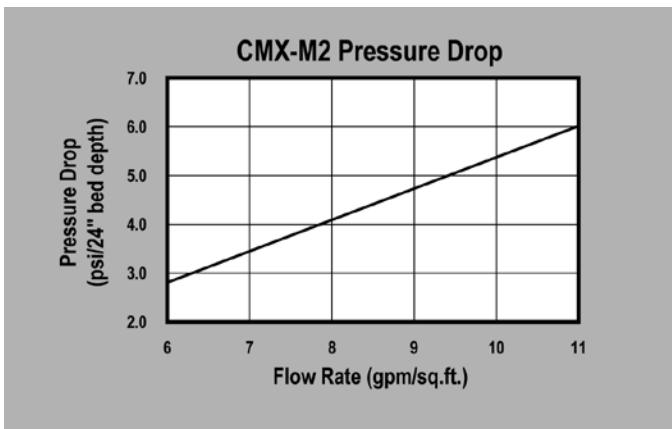
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CMX-M1 PRESSURE DROP — The graph above shows the expected pressure loss per 24 inches of bed depth as a function of flow rate.

CMX-M1 BACKWASH — The graph above shows the expansion characteristics as a function of flow rate at various temperatures.



CMX-M2 PRESSURE DROP — The graph above shows the expected pressure loss per 24 inches of bed depth as a function of flow rate.

CMX-M2 BACKWASH — The graph above shows the expansion characteristics as a function of flow rate at various temperatures.

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PRESSURE FILTRATION – SERVICE OPERATION

In service, water is normally pumped down through approximately 24 inches of media that is retained within a pressure vessel. Loading rates range from 6 to 12 gpm per square foot. The vessel has some type of diffusion system at the top and a bottom distribution/collection system. These systems are designed to ensure the feed water passes evenly through the media.

Upper Diffusion System

The top diffuser is generally not designed to retain media because the solids removed by the filter must exit through this diffuser. The primary purpose of this upper diffuser is to modify the flow direction of influent water so it does not drop directly onto the surface of the media and penetrate that surface. If a slot-type distributor is used, the slot opening must be large enough to allow coagulated solids to escape the vessel during backwash.

Media Layering and Depth

In most pressure filtration applications only one grade of CMX is required at a depth of 24 inches. Specific applications may require as little as 12 inches or as much as 36 inches. Typical iron and manganese removal requires 24 inches, as does arsenic removal.

Underbedding is usually recommended as follows*:

From bottom to top: 1/2 x 3/4 gravel to 4 inches over lower distributor; then 4 inches of 1/4 x 1/8 gravel; then 4 inches of #10-#20 garnet; then CMX.

* Alternate underbedding configurations may be required depending on the underdrain and tank configurations chosen.

Lower Distribution System

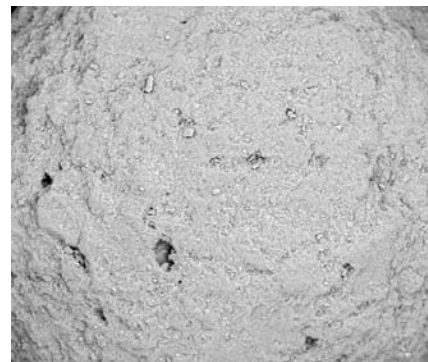
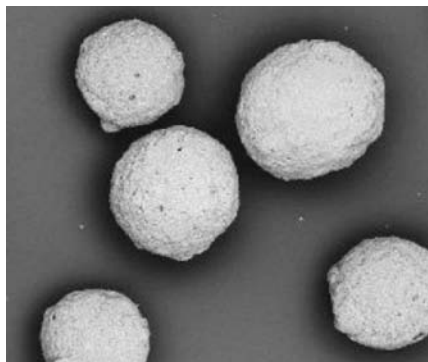
Careful distributor design is required for sustained, low pressure drop across the media/distributor interface. Manufacturer recommends hubs with slotted Schedule 80 plastic laterals or a stainless steel wedge-wire distributor, although other distributor designs have been used successfully including porous plates, caps, and stainless punch designs. Selection of slot size is important because CMX is very uniform. This is particularly true for applications without underbedding. Below are recommended ranges for slot sizing for each media:

Recommended Lower Distributor Slot Sizes for Direct Retention Underdrains**

CMX-M1: ≤ 0.005 inch (≤ 0.130 mm)

CMX-M2: ≤ 0.0065 inch (≤ 0.17 mm)

** Larger slots may be used in conjunction with underbedding.

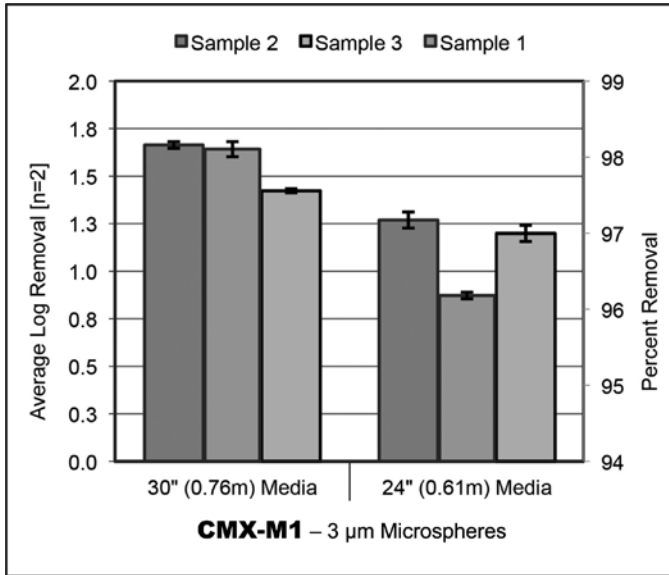


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3 to 5 micron microsphere log removal
Average removal 30 inches of media 97.1%
Average removal 24 inches of media 94.8%

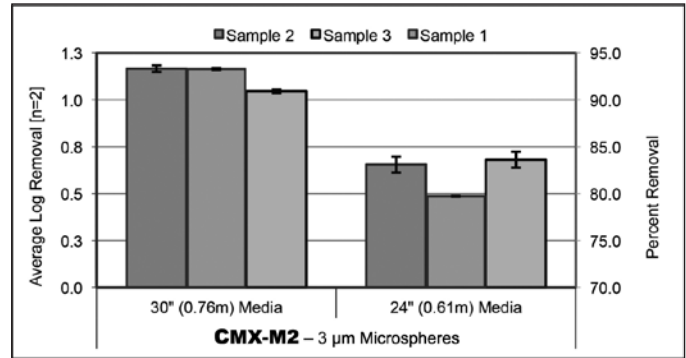
PERFORMANCE TESTING

Test Conditions

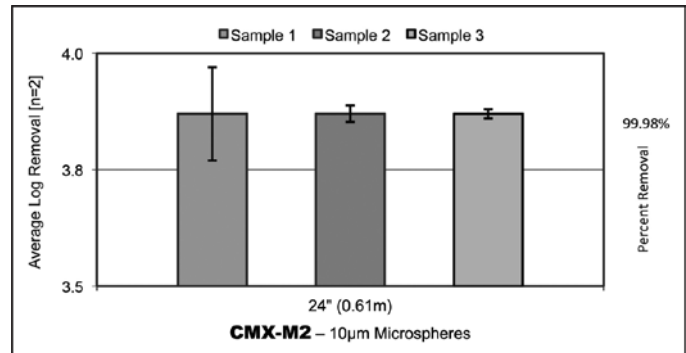
Test Column: 2 inch diameter
 Filtration Rate: 9.4 gpm/sq.ft. (22.5 m³)
 pH: 7.6
 Alkalinity: 100 mg/l as CaCO₃
 Hardness: 74 mg/l as CaCO₃
 Free Chlorine: 2.0 mg/l
 Total Dissolved Solids: 425 mg/l
 Total Organic Carbon: 4.2 mg/L
 Coagulation: None

Luminescent microspheres are dosed at the 140 to 160 spheres per ml into new filter media.

Three samples are taken at 3, 5, and 7 minutes and the feed water and effluent samples are counted.



3 to 5 micron microsphere log removal
Average removal 30 inches of media 90%
Average removal 24 inches of media 79%



10 micron microsphere log removal
for 24 inches of media >99.9%