



MaxFlo® in Water Treatment Case Examples

MaxFlo® from Agrilectric Research Company is a particulate filter media material. These products are produced from a carefully controlled process with testing and monitoring throughout the development. From the proper controls, the MaxFlo® is amorphous silica with irregular shapes of each individual particle and micron size porous structure (Figure 1). The irregular shaped rigid particles with micron sized pores ensures the MaxFlo filter aid is a high permeability, and high efficient filter media for fine suspended solid removal. On the other hand, the unique properties of amorphous silica and porous structure enables the MaxFlo® to perform as an adsorbent and an ion exchanger for dissolved organics, oil and grease (O&G), color and odor, and metal removal. The following case examples focus on effects of MaxFlo® for O&G, metals, and organics removal.

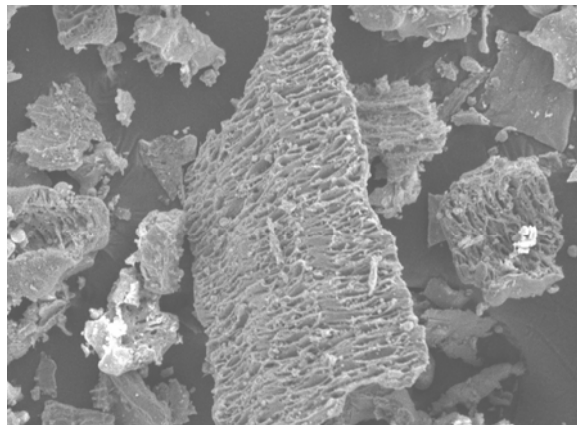


Figure 1 Porous Structure and Irregular Shape of MaxFlo® Particles

Case Example 1: COD Removal

This example involved an industrial wastewater stream that had a COD of 485 mg O₂/g, which is higher than regulated disposal limit. After filtration with body feed dosage of 2% MaxFlo, the COD was reduced to 71 mg O₂/g, which enabled disposal of the water stream.

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Case Example 2: TOC Removal

This example involved filtration of a car wash wastewater with MaxFlo fixed bed. The water was contaminated by diesel and gasoline oil, and fine colloidal sized particles. It also contained detergent which made it a greenish color. In a laboratory test, the water was filtered through a MaxFlo bed, and was collected as filtrate. The TOC before and after the MaxFlo bed are shown in Table 1. A picture of before and after MaxFlo bed in Figure 2 showed MaxFlo also removed the color from the feed water.

Table 1

Property	Untreated Water	Treated Water	% removal
TOC, ppm	32.3	10.1	68.7%

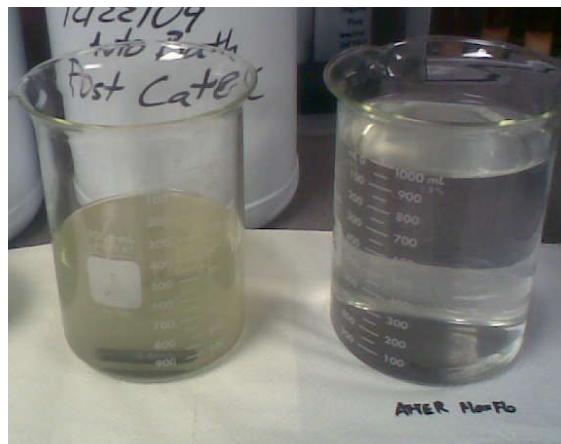


Figure 2 Car Wash Water Before MaxFlo® (left) and After MaxFlo® (Right)

Case Example 3: O&G Removal

This example involved mop water from a metal work facility. A 500ml of water was mixed with 5% of MaxFlo and mixed for 10 minutes, and then filtered by a constant pressure filter cell under 15psi. The TSS and O&G results of untreated and treated are shown in Table 2. The O&G was reduced by 80%.

Table 2

Property	Untreated Water	Treated Water	% removal
TSS, ppm	6300	<4	99.9%
O&G, ppm	207.5	41.6	80.0%

Case Example 4: Copper and Arsenic Removal

Chemical plant cooling water contained copper, sulfur, and arsenic which cannot be safely disposed. After filtration with 5wt% MaxFlo bodyfeed dosage, the water quality was greatly improved. Testing results are shown in Table 2. Over 97% arsenic removal was shown in Table 3.

Table 3

Property	Untreated Water	Treated Water	% removal
Copper, ppb	44	<2	>95.5
Sulfur ppm	173	<5	>97.1
Arsenic, ppb	1000	30	97
Iron, ppm	1.1	<0.072	93.5
Lead, ppb	50	<5	90%

Case Example 5: Heavy Metal Removal

This Example involved a plant scale wastewater treatment operation from a chemical plant with a treated MaxFlo® for heavy metal removal and fixation. After the modified MaxFlo® treatment, turbidity, TSS, copper, lead, zinc, nickel, chromium removals were all over 95%. The filter cake passed the EPA TCLP test for safe disposal.

Table 3

Property	Untreated Water	Treated Water	% removal	Discharge Limit
Turbidity, NTU	>100	0.06	>99.4	<0.2
TSS, ppm	100	<0.2	>99.8	<1
Copper, ppb	2000	<5	>99.75	15
Lead, ppb	100	<5	>95%	60
Zinc, ppb	3500	<10	>99.71	250
Nickel, ppb	400	<5	>98.75	130
Chromium, ppb	1000	<100	>90%	150