

## Purolite® MZ10 Plus

### Oxidizing and Filtering Medium

### For removal of iron, manganese and hydrogen sulfide

Purolite MZ10 Plus is a black catalytic media used for removing soluble iron, manganese, hydrogen sulfide, arsenic and radium from water supplies. The media has unique characteristics in addition to its catalytic property which facilitates the oxidation reduction reaction of iron and manganese.

Purolite catalyst technology is a proven technology for iron and manganese removal. Purolite MZ10 Plus can be used at high operating temperatures and high differential pressures without breakdown of the media and is classified as a "high rate" media where the filters can be run at very high linear velocities with excellent results. Unlike other medias, it does not require extensive pre-conditioning.

Catalytic Oxidation operation involves feeding of a predetermined amount of chlorine as far upstream as possible to the filter to allow for sufficient contact time. Sufficient residual of chlorine at the outlet of the filter will maintain the catalytic media in continuously regenerated condition. The amount of chlorine dosing will depend on the amount of iron, manganese and hydrogen sulfide present in the feed water.

The nodular shape and the controlled grading of the granular media, together with its ruggedness and durability provides for excellent filtration efficiency, even after years of continuous service.

#### TYPICAL PHYSICAL, CHEMICAL AND OPERATING CHARACTERISTICS

<b>Appearance</b>	Black granules shipped in a dry form
<b>Specific Gravity</b>	Approximately 2.4
<b>Capacity</b>	490 to 840 gm/m <sup>2</sup> of bed area
<b>Screen Size Range (dry)</b>	-16 + 60 B.S.S. Std. Mesh
<b>Particle Size Range (dry)</b>	0.25 mm to 1.2 mm
<b>Effective Size</b>	0.30 - 0.35 mm
<b>Uniformity Coefficient</b>	Less than 1.6
<b>Shipping Weight</b>	Approx. 1450 g/l
<b>Porosity</b>	Approx. 0.45

#### RECOMMENDED OPERATING CONDITIONS

<b>pH Range</b>	6.2 - 8.5
<b>Max Operating Temperature</b>	No specific limit
<b>Max Differential Pressure across the Bed</b>	0.85 Kg/cm <sup>2</sup>
<b>Backwash Characteristics</b>	30 m <sup>3</sup> /hr/m <sup>2</sup> minimum
<b>Service Flowrate</b>	5 - 30 m <sup>3</sup> /hr/m <sup>2</sup>
<b>Minimum Bed Depth</b>	700 mm (400 mm min each if dual media is used)

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## Applications

Purolite MZ10 Plus effectively removes iron, manganese and hydrogen sulfide from natural waters. Water for industrial and domestic uses must be substantially iron and manganese free. In many countries it is a requirement that water for municipal use should not contain iron and manganese concentrations of greater than 0.2 and 0.05 ppm respectively, and preferably below 0.05 and 0.02 ppm. In certain industries like pulp and paper mills, tanneries, textile plants, dye houses and laundries, it is almost impossible to operate with iron or manganese bearing waters since they would produce objectionable stains, streaks, spots and off-colors on many manufactured products. Iron and manganese also foul ion exchange resins. Hence, it is necessary to include a pretreatment stage in most ion exchange processes.

Purolite MZ10 Plus is particularly effective. As a result of its catalytic properties it is used in conjunction with chlorine dosing, to reduce iron and manganese in water supplies to the extremely low levels mentioned. Alternative procedures such as aeration, chlorination and filtration cannot yield an effluent to the same standards of quality as obtained with Purolite MZ10 Plus.

Purolite MZ10 Plus has unique characteristics in addition to its catalytic property which ensures maximum efficiency of the oxidizing agent employed, for example potassium permanganate, chlorine or dissolved oxygen. This results in superior rate of reaction and completeness of the oxidation. These properties together with its excellent filtration efficiency ensure good operating performance in the following:

### 1. *Oxidation/Reduction*

In the same way that ion exchange resin has the capacity to exchange ions, Purolite MZ10 Plus can exchange electrons. Thus, iron and manganese can be oxidized, so long as a supply of electrons remains. The electrons can be replaced, either by regenerating intermittently by adding an oxidizing agent such as chlorine or by dosing the oxidizing agent continuously.

### 2. *Catalysis*

The catalytic effect ensures that the maximum use is made of the oxidizing agent, which can be potassium permanganate, chlorine or dissolved oxygen.

### 3. *Filtration*

On account of the nodular form and the size distribution, a high contact area and good filtration characteristics are obtained.

## Advantages

- It can take max iron concentrations up to 20 ppm
- It can reduce iron, Mn and H<sub>2</sub>S up to < 0.1 ppm
- It has no limitation of 15% dissolved oxidation
- It has no limitation of alkalinity and TDS in water
- It needs only periodic backwash with treated water
- You can easily calculate the OBR of this system
- It can be operated at high temperatures and high differential pressures.
- It can be operated at high capacity

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