

# Arsenic

# Iron

# Manganese

# Hydrogen Sulfide



## 4 CONTAMINATES IN ONE SYSTEM

- ◆ Unique multi-contaminate removal - Arsenic, Iron, Manganese & Hydrogen Sulfide
- ◆ Long service life of 7-10 years
- ◆ Chemical-free regeneration
- ◆ Commercial grade components
- ◆ Automatic backwash & regeneration

## How it works

The oxidative chemical locked inside CR-26 beads removes arsenic using metal-oxide nano-particles that are precipitated within the resin bed where they form very strong chemical bonds with arsenite (As III) and arsenate (As V). The media is regenerated via the dissolved oxygen in the backwash water. This means chemicals such as chlorine dioxide, potassium permanganate, chlorine or sodium chloride brine solution are not needed for regeneration.

## Benefits

Unique multiple contaminant removal with CR-26 is extraordinary for its ability to remove multiple water contaminants delivering a more complete conditioning of water in a single treatment system.



## SYSTEM SPECIFICATIONS:

Model Number	Flow Rate @ 15 psid	Backwash Rate	Pipe Size	Electrical	Water Pressure	Mineral Tank Size (in)	Total System Size (in)
<b>ATCBF-1.0-AS</b>	5	3.2 gpm	1" NPT Elbow	120 v. 60 Hz	40 - 100 psi	9 x 48	12 x 12 x 58
<b>ATCBF-2.0-AS</b>	10	4.2 gpm	1" NPT Elbow	120 v. 60 Hz	40 - 100 psi	12 x 52	15 x 15 x 64
<b>ATCBF-3.0-AS</b>	15	6.3 gpm	1.25" NPT	120 v. 60 Hz	40 - 100 psi	14 x 65	17 x 17 x 75

# CR 26 Iron, Manganese, Hydrogen Sulfide and Arsenic Removal Media

CR 26 is a special media designed to provide excellent catalytic properties required for removal of many contaminants from potable and non-potable aqueous streams. CR 26 is an insoluble media that oxidizes species in solution including hydrogen sulfide, iron and manganese. Metal-oxide nano-particles are precipitated within the resin bed where they form very strong chemical bonds with arsenite (As III) and arsenate (As V). This allows CR 26 to thoroughly and effectively remove arsenic along with Fe, Mn and H<sub>2</sub>S.

## Physical Chemical Properties

Physical Form:	Black, moist spherical beads
Moisture Content:	46 to 52%
Net Weight (as shipped):	800 kgs/m <sup>3</sup> , approximately
Particle size:	0.3 to 1.2 mm
>1.2 mm %	5.0 maximum
<0.3 mm %	1.0 maximum
Effective Size:	0.50 to 0.60 mm
Uniformity Coefficient:	1.7 maximum

## Recommended Operating Conditions

Influent pH:	6.0 to 9.0
Dissolved oxygen:	2 mg/l or 15% greater than Iron (Fe) content
Freeboard:	30% to 50%
Free chlorine:	0.5 to 1.0 mg/l
Organic matter:	Less than 1.0 ppm
Total dissolved solids:	2500 ppm maximum
Total suspended solids:	<1 ppm

## Packing

CR 26 is supplied in 1 cubic foot poly bags.

## Storage

Resins require proper care at all times. The resins must never be allowed to dry. Recommended storage temperature is between 65°F to 110°F.

## Safety Information

CR 26 is not a hazardous product and is not WHMIS controlled.

Caution: Acidic and basic regenerant solutions are corrosive and should be handled in a manner that will prevent eye and skin contact. Before using strong oxidizing agents in contact with ion exchange resin, consult sources knowledgeable in the handling of these materials.

## CR 26 Features

### Chemical Free Regeneration

CR 26 does not require chemicals such as chlorine dioxide, potassium permanganate, chlorine or sodium chloride brine solution for regeneration. The oxidative chemical locked inside CR 26 beads is regenerated via the dissolved oxygen in the backwash water.

### Potable and Non-Potable Water Applications

CR 26 requires less contact time and is like standard softening resins in bulk density and handling making it an ideal choice for point-of-entry (POE) systems. CR 26 can be backwashed at lower flow rates to achieve ideal bed expansion needed to remove metal-oxide precipitates generated during the service cycle. CR26 is easy to handle versus other oxidative media and many naturally occurring zeolites.

### Multiple Contaminant Removal

CR 26 was initially designed for the selective removal of iron and manganese but testing has shown the product to be ideal for multi-contaminant removal. See page 3 of this bulletin for a summary of various tests performed to date.

### Expected Service Life

Due to the unique nature of CR 26 and its function as an oxidizing agent encapsulated within an ion exchange bead, a long service life of 7 to 10 years is expected.



# CR 26 Iron, Manganese, Hydrogen Sulfide and Arsenic Removal Media

## Operating Suggestions (POE Systems)

### 8 to 10 ppm feed iron

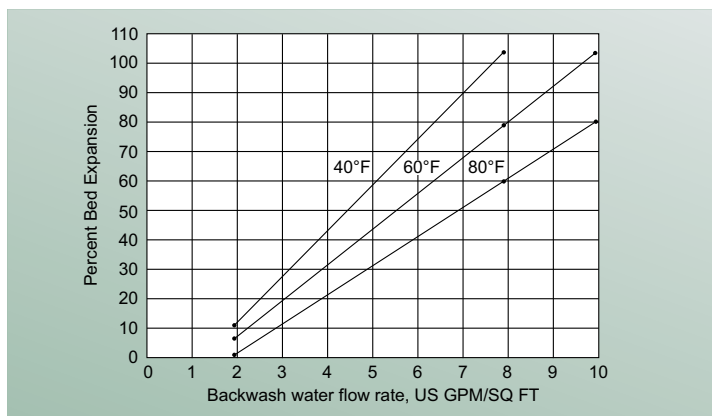
Bed depth:	30"
Maximum flow rate:	2.0 US GPM per cubic foot resin
Backwash velocity:	5.0 to 6.0 US GPM per square foot resin at 50°F*
Backwash time:	10 to 15 minutes
Bed expansion:	30 to 40%
Backwash frequency:	Daily

### 5 to 7 ppm feed iron

Bed depth:	30"
Maximum flow rate:	2.5 US GPM per cubic foot resin
Backwash velocity:	5.0 to 6.0 US GPM per square foot resin at 50°F*
Backwash time:	10 to 15 minutes
Bed expansion:	30 to 40%
Backwash frequency:	Daily

### 1 to 5 ppm feed iron

Bed depth:	30"
Maximum flow rate:	4.0 US GPM per cubic foot resin
Backwash velocity:	5.0 to 6.0 US GPM per square foot resin at 50°F*
Backwash time:	10 to 15 minutes
Bed expansion:	30 to 40%
Backwash frequency:	Daily



\*Fig. 1 Bed expansion vs. backwash flow rate for various water temperatures

## CR 26 General Guidelines

- The media can treat water having an iron content above 10 ppm, but the process is not economical particularly for large flow rates. Hence it is recommended to remove iron by pretreating the water by aeration, followed by clarification and filtration. CR 26 shall then be used as a polishing media.
  - Free chlorine should be removed before passing water through the media.
  - The treated water from CR 26 will have an iron content of <0.1 ppm.
  - CR 26 removes dissolved iron from water, which is present as ferrous iron. Iron can also exist in other forms such as bacterial iron, soluble organic iron and colloidal iron. Those forms of iron cannot be removed effectively by CR 26.
  - All sequestering agents including polyphosphates and meta-phosphates should be added after the CR 26 unit.
  - For high iron content in feed water (> 10 ppm), it is recommended to backwash the unit with treated water, so as to avoid contamination of bottom portion of the bed.
  - The unit must be backwashed at specified flow rate for effective removal of precipitated iron and suspended solids.
  - The backwash frequency shall be every 24 to 48 hours for continuous operating unit. If the unit is operated intermittently, backwash at the end of each cycle.





## United Water Inc. CR Series Media

# CR 26 Iron, Manganese, Hydrogen Sulfide and Arsenic Removal Media

### Multi-Contaminant Removal – Lab data

#### Test 1:

- City water spiked - 10 ppm each of Fe, Mn, H<sub>2</sub>S, As III and As V.
- CR 26 column operated, effluent samples taken after several bed volumes.
- Third party testing found Fe, Mn, H<sub>2</sub>S all non-detect; As in effluent was 29 ppb.

#### Test 2

- City water spiked - 10 ppm each of Fe, Mn, H<sub>2</sub>S and 100 ppb As III and As V.
- CR 26 column operated, effluent samples taken after several bed volumes.
- Third party testing found Fe, Mn, H<sub>2</sub>S and As all non-detect.

#### Test 3

- City water spiked - 1 ppm each of Fe, Mn, H<sub>2</sub>S and 100 ppb As III and As V.
- CR 26 column operated, effluent samples taken after several bed volumes.
- Third party testing found Fe, Mn, H<sub>2</sub>S and as all non-detect.

#### Test 4

- City water spiked – 0.5 ppm each of Fe, Mn, H<sub>2</sub>S and 100 ppb As III and As V.
- CR 26 column operated, effluent samples taken after several bed volumes.
- Third party testing found Fe, Mn, H<sub>2</sub>S and As all non-detect.



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