Manganese Removal Plant

Remove manganese from groundwater with oxidation and catalytic media

Overview

Manganese in borewell water leaves black stains on fixtures and laundry, and gives a metallic taste. It is harder to remove than iron because it oxidises more slowly and at higher pH.

Arukal supplies manganese removal plants that dose an oxidant such as potassium permanganate or chlorine and filter the water through catalytic media. We also supply the media and advise on regeneration.

< 0.1 mg/L	0.5 – 100 m³/h	Permanganate / chlorine	Catalytic MGS
Outlet manganese	Capacity	Oxidant	Media

Key features

Removes manganese Outlet manganese below 0.1 mg/L is typical.	**Dosing included** Dosing pump, tank and controls in the scope.
Also handles iron The same plant removes iron and, with the right media, hydrogen sulphide.	**Sized to your water** Designed from manganese, iron and pH.
Catalytic media Media that speeds up oxidation for better removal.	**Support** Start-up, media and servicing.

Applications

Borewell water • Hostels and hotels • Housing societies • Industries • Municipal wells • Pre-treatment before RO

How it works

1. Raise pH if needed	2. Oxidant dose	3. Catalytic filtration	4. Backwash and regenerate
Manganese oxidises faster at higher pH, so pH may be corrected first.	Potassium permanganate or chlorine oxidises dissolved manganese into solids.	Manganese greensand or similar media catalyses oxidation and traps the particles.	Backwash clears the solids; the media is regenerated with permanganate if it is a greensand type.

Care and handling

Dose. Keep the oxidant dose steady and tuned to the analysis. Over-dosing leaves a pink tint.
Backwash. Backwash on time so the media does not cake.
Regenerate. Regenerate greensand media with permanganate as advised.

Manganese Removal Plant

Technical specifications

Typical values. Values are typical for the product family and given for guidance. Exact figures depend on the make and model supplied; ask us for the data sheet of the specific model.

Plant (typical)

Feed manganese	up to 2 – 5 mg/L (higher on request)
Outlet manganese	< 0.1 mg/L (typical)
Feed pH	6.8 – 8.5 (pH correction if lower)
Filtration velocity	approx. 6 – 10 m/h
Backwash rate	approx. 25 – 30 m/h
Oxidant	$KMnO_4$ (approx. 1 mg/L per 0.5 mg/L Mn + 0.2 mg/L per mg Fe), or chlorine

Construction

Vessel	MS rubber lined or epoxy-coated, or FRP
Media	Manganese greensand, pyrolusite or equivalent on gravel support
Dosing	Dosing pump with chemical tank and mixer
Valves	Multiport or diaphragm valves

Typical plant sizes

Model	Capacity	Vessel	Typical use
MR 1	1 m³/h	18 – 24 in	Home, small shop
MR 5	5 m³/h	36 in	Hotel, institution
MR 10	10 m³/h	48 in	Industry, society
MR 25	25 m³/h	72 in	Municipal and industrial

Plants are designed from the analysis of manganese, iron, pH and organics.

To receive a recommendation, send us:

- Water analysis (manganese, iron, pH, alkalinity, hardness, hydrogen sulphide)
- Required flow (m³/h) and daily demand
- Whether permanganate or chlorine can be handled
- Existing pump, tank and space