

INDION® ISR

IRON REMOVAL MEDIA

Description

INDION ISR is a special media designed to provide excellent catalytic properties to remove dissolved iron from ground water. INDION ISR is an insoluble media which oxidizes dissolved ferrous iron (Fe++) to insoluble ferric iron (Fe+++).

The insoluble iron thus formed gets trapped in the bed and is effectively filtered .A simple water backwash removes these trapped iron particles from the bed .

Characteristics

Appearance	:	Black , Moist spherical beads
Shipping weight, kgs/m ³	:	800 approx.
Particle size, mm	:	0.3 to 1.2
> 1.2 mm %, max.	:	5.0
< 0.3 mm %, max.	:	1.0
Effective size , mm	:	0.40 to 0.50
Uniformity co-efficient,max.	:	1.7
%Moisture content	:	46 - 52

Recommended influent Conditions

pH range	:	> 6.5
Dissolved oxygen	:	Greater than 15% of Iron content
Alkalinity ,minimum	:	100 ppm or 10% of chlorides and sulfates Combined , whichever is less
Oil and Free chlorine	:	Nil
Organic matter	:	Less than 1.0 ppm
Total dissolved solids	:	2500 ppm , max.
Total suspended solids	:	10 ppm , max.
Temperature range	:	20 – 40 °C

Suggested Operating Conditions

A. For 8-10 ppm feed iron

Bed depth	:	0.75 m , minimum
Treatment flow rate`	:	10-14 m/h , maximum
Backwash velocity	:	24 m/h , minimum
Backwash time	:	10-15 mins.
Bed expansion	:	30 – 40%
Backwash frequency	:	Daily

B. For 5-7 ppm feed iron

Bed depth	:	0.6 m , minimum
Treatment flow rate	:	15-17 m/h , maximum
Backwash velocity	:	24 m/h , minimum
Backwash time	:	10-15 mins.
Bed expansion	:	30 – 40%
Backwash frequency	:	Daily

C. For < 5 ppm feed iron

Bed depth	:	0.5 m , minimum
Treatment flow rate	:	20 m/h , maximum
Backwash velocity	:	24 m/h , minimum
Backwash time	:	10-15 mins.
Bed expansion	:	30 – 40%
Backwash frequency	:	

D. For 1-4 ppm feed iron (For POU unit)

Bed depth	:	0.75 m , minimum
Treatment flow rate	:	10-14 m/h , maximum
Backwash velocity	:	24 m/h , minimum
Backwash time	:	10-15 mins.
Bed expansion	:	30 – 40%
Backwash frequency	:	Daily

Advantages

1. The wide particle size range of INDION ISR acts as a filter media, in addition to iron precipitation.
2. INDION ISR acts as a catalytic media and hence has a longer life.
3. INDION ISR does not require any chemicals for regeneration. Regeneration is possible with a water backwash.
4. The catalytic activity is faster in INDION ISR and hence requires less contact time and bed depth. This property makes it the ideal media for POU devices.
5. Due to spherical beads the media undergoes less compaction. This leads to less pressure drop across the bed.
6. Wide temperature range (20-40°C).
7. Works well at lower level of alkalinity. This is an advantage when high TDS (>1000 ppm) water is treated for Iron removal.
8. No clinker formation and loss of activity due to improper backwash and storage in the vessel. The media can be removed from the vessel, cleaned and reused.

Packing

INDION ISR is supplied in 50 litres HDPE drums with plastic liners. It can also be supplied in other packings as per customer's requirements.

Storage

Ion Exchange resins require proper care at all times. The resins must never be allowed to dry. Regularly open the plastic bags and check the condition of the resin when in storage. If not moist, add enough clean demineralised water and keep it in completely moist condition. Always keep the resin drum in the shade. Recommended storage temperature is between 20° C - 40° C.

General guidelines for using INDION ISR

1. INDION ISR can be directly used to treat bore well water having suspended solids below 10 ppm . However pretreatment is required if suspended solids are high.
2. 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 . INDION ISR shall then be used as a polishing media.
3. Free chlorine should be removed before passing water through the media.
4. The treated water from INDION ISR will have an iron content in the range of 0.1 to 0.3 ppm .The feed water to ion exchange system or RO system requires iron below 0.1 ppm . The iron content of 0.3 ppm can be further reduced to 0.1 ppm and less after passing through sand filter , carbon filter or any other sediment filter by removal of fine colloidal iron precipitates.
5. INDION ISR removes dissolved iron from water which is present as ferrous iron.The iron can also exist in other forms such as Bacterial iron ,Soluble organic iron and colloidal iron.This form of iron cannot be removed effectively by INDION ISR.
6. All the sequestering agents including polyphosphates and meta-phosphates should be added after the INDION ISR unit.
7. For high iron content in feed water (around 10 ppm) , it is recommended to backwash the unit with treated water , so as to avoid contamination of bottom portion of the bed.
8. The unit must be backwashed at specified flow rate for effective removal of precipitated iron and suspended solids ; else it can cause choking of media.
9. The backwash frequency shall be every 12 hours (twice a day) for continuous operating unit.If the unit is operated intermittently , the total operating time in service cycles shall be limited to 5-6 hours before next backwash.

COMPARISON WITH BIRM MEDIA

Description	INDION ISR	BIRM
Max. service velocity ,with feed iron of < 5 ppm	20 m/h	9-12 m/h
Max. service velocity ,with feed iron of 5 to 7 ppm	17 m/h	9-12 m/h
Max. service velocity ,with feed iron of 8 - 10 ppm	14 m/h	9-12 m/h
Backwash velocity	24 m/h	24 – 30 m/h
Feed alkalinity , min.	100 ppm	> 2 times EMA
Bulk density , kg/m ³	0.8	0.65
Bed depth	0.5 – 0.75 m	0.75 – 0.9 m

Comments :

1. The service velocity for BIRM media is same for feed iron content up to 10 ppm as a result the size of unit , media quantity and cost remains same at a given flow rate. In case of INDION ISR the service velocity can be increased for a lower feed iron content , thus reducing the equipment cost.
2. The backwash velocity for INDION ISR is equivalent (or sometimes less) to that of BIRM media.
3. The BIRM media requires high alkalinity level in feed water as compared to INDION ISR which works at very low alkalinity levels.
4. INDION ISR requires less bed depth than BIRM media for a specific feed iron content. This inturn requires less quantity of media.

INDION



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