ION EXCHANGE
Refreshing the Planet

INDION® ISR

Iron Specific Resin

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^{2+}) to insoluble ferric iron (Fe^{3+}).

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	Dark black, moist spherical beads
Shipping weight*	720 - 760 kg/m^3
Particle size range	0.3 to 1.2 mm
> 1.2 mm	5.0%, maximum
< 0.3 mm	1.0%, maximum
Uniformity co-efficient	1.8, maximum
Effective size	0.45 to 0.60 mm
Moisture holding capacity	45 - 55%
Minimum flow greater than or equal to	1.73 gpm/ft^3 of resin, 13.9 LPH/l of resin, 13.9 BV/h
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, maximum
Total suspended solids	10 ppm, maximum
Temperature range	15° - 45° C

*Weight of resin, as supplied, occupying 1m^3 in a unit after backwashing and draining.

Suggested operating conditions

A. Up to 10.0 ppm feed iron	
Bed depth	0.7 -1.5 m, minimum
Service velocity	15 m/h
Backwash velocity	26 - 30 m/h
Backwash bed expansion	40 - 50%
Backwash time	15 - 20 minutes
Backwash frequency	8 - 10 hrs or AP of 1.0 kg/cm^2 whichever is earlier

B. Up to 5.0 ppm feed iron	
Bed depth	0.5 -1.5 m, minimum
Service velocity	15- 20 m/h
Backwash velocity	26 - 30 m/h
Backwash bed expansion	40 - 50%
Backwash time	15 - 20 minutes
Backwash frequency	10 - 12 hrs or AP of 1.0 kg/cm^2 whichever is earlier

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 (15° C - 45° 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.

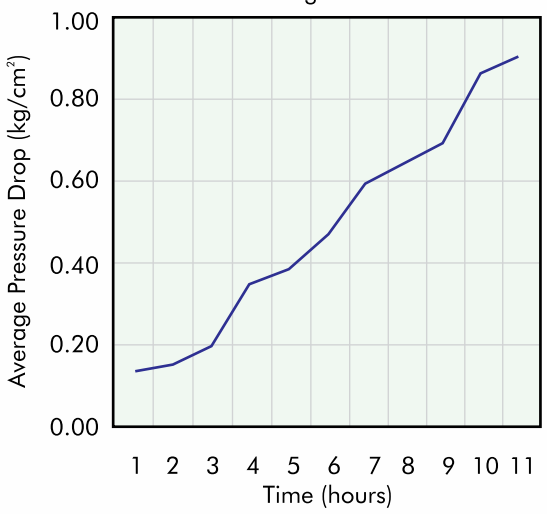
General guidelines for using INDION ISR

1. It is recommended to rinse the resin with minimum 10 bed volumes of DM water before taking it into service.
2. 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.
3. 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.
4. Free chlorine should be removed before passing water through the media.
5. 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.
6. 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.
7. All the sequestering agents including polyphosphates and meta-phosphates should be added after the INDION ISR unit.
8. 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.
9. 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.
10. 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.

AVERAGE PRESSURE DROP STUDY

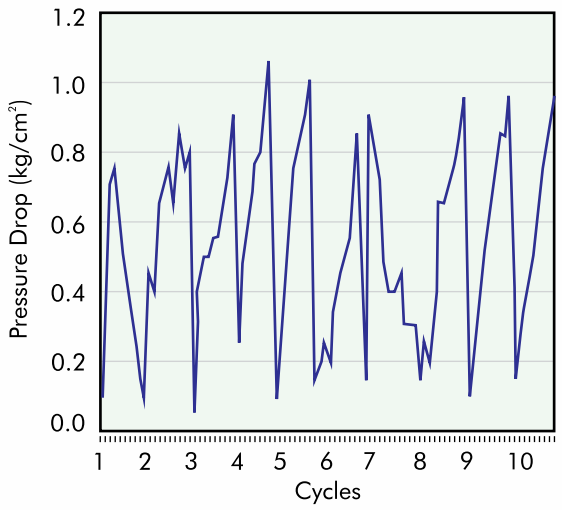
Service velocity =10 -15 m/h, Iron = 10ppm
Number of cycles = 10

Figure 1



BACKWASH EFFICIENCY

Figure 2



Packing

HDPE Lined bags	:	25/50 lts
LDPE bags	:	1 cft/25 lts
Super sack	:	1000 lts
Super sack	:	35/40/42 cft
MS/HDPE drums with liner bags	:	180/200 lts
Fiber drums with liner bags	:	7 cft

Storage

Ion Exchange resins require proper care at all times. The resins must never be allowed to become 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 15° C - 45° C.

Safety

Acid and alkali solutions used for regeneration are corrosive and should be handled in a manner that will prevent eye and skin contact. If any oxidizing agents are used necessary safety precautions should be observed to avoid accidents and damage to the resin.

CONFORMANCE STATEMENT: This product conforms to NSF / ANSI Standard 61and is certified with GOLD SEAL from WQA C

INDION range of Ion Exchange resins are produced in a state-of-the-art ISO 9001 and ISO 14001 certified manufacturing facilities at Ankleshwar, in the state of Gujarat in India.

To the best of our knowledge the information contained in this publication is accurate. Ion Exchange (India) Ltd. maintains a policy of continuous development and reserves the right to amend the information given herein without notice.

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