

# INDION® ARU 104

## Uranium Specific Resin

### Description

INDION ARU104 is a gel strong base type I anion exchange resin, specially optimised for recovery of uranium by continuous ion exchange. Its equilibrium capacity, kinetics of loading and elution and hydraulic properties have been carefully balanced so as to give a minimum total resin inventory and equipment size.

INDION ARU 104 has also been designed for higher uranium equilibrium capacity and lower silical pick up. INDION ARU 104 is normally supplied in chloride form. It should therefore be converted to the sulphate form before being put on stream.

### Characteristics

Appearance	:	Golden yellow beads
Matrix	:	Styrene DVB copolymer, gel
Functional group	:	Quaternary ammonium
Ionic form as supplied	:	Chloride
Total exchange capacity	:	1.6 meq/ml, minimum
Moisture holding capacity	:	38 - 42 %
Shipping weight *	:	670 kg/m <sup>3</sup> , approximately
Particle size range	:	0.3 to 1.2 mm
> 1.2 mm	:	Nil
< 0.3 mm	:	1.0%, maximum
Uniformity co-efficient	:	1.2, maximum
Effective size	:	0.45 to 0.55 mm
Maximum operating temperature	:	60° C in OH form 80° C in other forms
Operating pH range	:	0 to 14
Resistance to reducing agents	:	Good
Resistance to oxidising agents	:	Generally good, chlorine should be absent
Chemical resistance	:	Insoluble in dilute solutions of acids, bases and common solvents
Osmotic stability	:	Excellent

\* Weight of resin, as supplied, occupying 1 m<sup>3</sup> in a unit after backwashing and draining.

## Packing

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

## Storage

Ion exchange resins require proper care at all times. The resin 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 20° C and 40° 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 oxidising agents are used, necessary safety precautions should be observed to avoid accidents and damage to the resin.

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.

**INDION** is the registered trademark of Ion Exchange (India) Ltd.

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**MATERIAL SAFETY DATA SHEET**

Revision Date : 01/06/2011

**1. IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND OF THE COMPANY**

**Identification of the substance / preparation :**

<b>Product Name</b>	<b>INDION ARU 104</b>
<b>Chemical Name</b>	Crosslinked Polystyrene with quaternary ammonium functionality
<b>Ionic Form</b>	Chloride

**Use of the substance/preparation**

**Main use** Ion exchange / Water Purification

**Identification of the Company :**

**Company undertaking** ION EXCHANGE (INDIA) LIMITED

**Identification**

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**2. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Description</b>	Concentration
<b>Functionalised co-polymer</b>	56 – 60 % (Styrene/divinylbenzene)
<b>Moisture content</b>	40 – 44 %

**3. HAZARDS IDENTIFICATION**

<b>Contact with eyes</b>	Irritating to eyes (R36)
<b>Contact with skin</b>	Mildly irritating to skin.
<b>Ecological hazards</b>	May change the pH of receiving waters in case of major spillages.

#### 4. FIRST AID MEASURES

<b>Contact with skin</b>	Remove contaminated clothing. Remove particles and wash affected area with water.
<b>Contact with eyes</b>	Immediately wash out with plenty of water and remove all particles. Seek medical attention if irritation persists.
<b>Ingestion</b>	Give 200 – 300 ml water to drink. Never give anything by mouth to an unconscious person. Seek immediate medical attention.
<b>Inhalation</b>	Remove patient to fresh air. Seek medical advice.

#### 5. FIRE- FIGHTING MEASURES

Incase of fire, use foam, carbon dioxide or dry agent.  
Substance evolves toxic fumes, wear self-contained breathing apparatus (see Section 10).  
Wear full protective clothing including chemical protection suit.  
Prevent run off water from entering drains if possible.  
If polluted water reaches drainage systems or water courses, immediately inform appropriate authorities.

#### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal precautions</b>	Keep people away. Floor may be slippery, take care to avoid falls.
<b>Environmental precautions</b>	Do not allow to enter public sewers and water courses.
<b>Clean up actions</b>	Sweep-up and transfer to plastic containers for recovery or disposal, according to advise in section 13.

#### 7. HANDLING AND STORAGE

<b>Handling</b>	The usual precautions for handling chemicals should be observed.
<b>Storage</b>	Risk of static discharge from dry beads.

#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Exposure controls</b>	No special precautions are required for this product.
<b>Occupational exposure controls</b>	
<b>Respiratory protection</b>	Not required for normal operation.
<b>Hand protection</b>	Wear suitable gloves.
<b>Eye protection</b>	Wear safety glasses or goggles. An eyewash facility should be available.

**Skin protection**

Wear chemical protective overalls.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### General information

**Appearance**

Golden yellow coloured spherical beads

**Physical state**

Solid

**Odour**

No odour

### Important information for human health, safety and environment

**pH as supplied**

Neutral in aqueous slurry

**Boiling point**

Not applicable

**Flammability point**

The preparation starts burning over 230° C only if ignited.

**Flammability**

The preparation is not flammable before the evaporation of moistening water

**Explosive properties**

None

**Burning properties**

None

**Specific gravity**

1.1, approximately

**Solubility**

In water : virtually insoluble

In oil : insoluble

**Partition coefficient**

Not applicable

**n-octanol/water**

**Viscosity**

Not applicable

**Flash point**

Not applicable

**Melting point**

Not applicable

**Auto-ignition temperature**

Over 500° C

## 10. STABILITY AND REACTIVITY

**Conditions to avoid**

This material is considered stable under normal conditions.

**Materials to avoid**

Incompatible with strong oxidizing agents. Contact with strong oxidizers, especially nitric acid, may produce low molecular weight organics that may form explosive mixtures.

**Hazardous decomposition products**

Combustion products may include monomers, residual organics, carbon and sulphur oxides.

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Information

LD 50 (Oral, Rat) : Not applicable  
 LD 50 (dermal, rabbit) : Not applicable  
 LC50 (inhalation, rat) : Not applicable  
 Irritation to eyes (rabbit) : Slightly Irritating  
 Skin corrosion / irritation (rabbit) : No data available  
 Ignition : No hazards anticipated if material has not exchanged hazardous substances.  
 No evidence of carcinogenic effects.  
 No evidence of teratogenic effects.  
 No evidence of mutagenic effects.

### Carcinogenicity

### Teratogenicity

### Mutagenicity

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

Information not available.

### Mobility

Virtually insoluble in water.  
 The product is not volatile.

### Persistence and biodegradability

The product is not readily biodegradable

### Risk of bioaccumulation

None

### Other adverse effects

May change the pH of receiving waters in case of major spillages.

## 13. DISPOSAL CONSIDERATIONS

The product as delivered is a non-hazardous waste.

The used product may be subject to different classifications. In any case the product shall be disposed off, according to local, regional and national regulations.

EU number for exhausted or saturated ion exchange resins used for the preparation of drinking water or water for industrial use is 19 09 05.

EU number for exhausted or saturated ion exchange resins used in waste water treatment plants not otherwise specialized is 19 08 06.

## 14. TRANSPORT INFORMATION

Ion exchange resins as supplied are not classified as hazardous for transport.

Classification for ROAD and RAIL transport: Not regulated  
 (Not dangerous for transport)

Classification for SEA transport: Not regulated  
 (Not dangerous for transport)

Classification for AIR transport: Not regulated  
(Not dangerous for transport)

**15. REGULATORY INFORMATION**

**Risk phrases**

The product as supplied is non hazardous.

R 36 : Irritating to eyes.

S 26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 39 : Wear eye/face protection

**16. OTHER INFORMATION**

**Note :**

Industrial grade products are not intended for analytical, food, medical and pharmaceutical applications without preliminary extensive purification.

**Whilst every effort has been made to be as accurate as possible, Ion Exchange (India) Limited provides no warranty with respect to this information and disclaims all liability associated with its use.**