

## **INDION<sup>®</sup> RESINS**



### **The Preferred Choice**

Our INDION range is backed by sustained focus on customer needs, intensive product and application R&D, sound technical support and wide application knowhow. Add to this continuous innovation, worldclass quality, state-of-the-art ISO 9001 & 14001 certified facilities, an FDA approved pharmaceutical grade resin manufacturing unit...and you get the perfect recipe that makes INDION the preferred choice across sectors for over five decades.

### **Wide Range. Extensive Applications.**

A complete range of cation & anion resins for water and waste water treatment as well as a host of speciality applications - pharmaceutical excipients, catalysts, nuclear grade resins, chelating resins for brine softening and heavy metal removal, adsorbent grade resins, resins for removal of colour, odour, organics, nitrate & tannin, resins for purification of bio-diesel, sugar, food & beverages and many more...

- Refinery & Petrochemical
- Steel, Power & Paper
- Food & Beverages
- Pharmaceuticals  
Bio-technology & Electronics
- Textiles, Sugar, Auto & Mini-steel
- Cement & Chemicals

# INDION® Ion Exchange Resins

## Properties and Applications - Summarised Data

Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications	
<b>Industrial Water Treatment</b>											
<b>INDION Controlled Particle Size Ion Exchange Resins (CPS Resins)</b>											
<b>Anion Exchange Resins</b>											
SBA	Gel	GS 3000 (Type 1)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.50 – 0.65 (effective size)	48 – 58	60 (OH <sup>-</sup> )	1.3	Cl <sup>-</sup> to OH <sup>-</sup> 25 – 30	Demineralisation in co-current and countercurrent mode. Condensate polishing & caprolactum purification.
<b>Cation Exchange Resins</b>											
SAC	Gel	2250 Na	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.50 – 0.65 (effective size)	43 – 50	120	2.0	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	Premium grade cation exchange resin for water softening.
		2250 H	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.50 – 0.65 (effective size)	49 – 55	120	1.8	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	Premium grade cation exchange resin for demineralisation.
<b>Industrial Water Treatment</b>											
<b>Anion Exchange Resins</b>											
SBA	Isoporous	FF-IP (Type 1)	Crosslinked Polystyrene	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	47 – 55	60 (OH <sup>-</sup> )	1.2	Cl <sup>-</sup> to OH <sup>-</sup> 10 – 15	Demineralisation in co-current and countercurrent mode.
		FF-IP (MB)	Crosslinked Polystyrene	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	47 – 55	60 (OH <sup>-</sup> )	1.2	Cl <sup>-</sup> to OH <sup>-</sup> 10 – 15	Used in mixed bed.
		N-IP (Type 2)	Crosslinked Polystyrene	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	45 – 53	40 (OH <sup>-</sup> )	1.2	Cl <sup>-</sup> to OH <sup>-</sup> 10 – 15	Demineralisation in co-current and countercurrent mode.
	Gel	GS 300 (Type 1)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	48 – 58	60 (OH <sup>-</sup> )	1.3	Cl <sup>-</sup> to OH <sup>-</sup> 25 – 30	Demineralisation in co-current and countercurrent mode. Condensate polishing & caprolactum purification.
		GS 400 (Type 2)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	45 – 51	40 (OH <sup>-</sup> )	1.2	Cl <sup>-</sup> to OH <sup>-</sup> 10 – 15	Demineralisation in co-current and countercurrent mode.
	Macroporous	810 (Type 1)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	56 – 63	60 (OH <sup>-</sup> )	1.0	Cl <sup>-</sup> to OH <sup>-</sup> 15 – 20	Demineralisation in co-current and countercurrent mode.
		830 (Type 1)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	57 – 66	80 (Cl <sup>-</sup> )	0.95	Cl <sup>-</sup> to OH <sup>-</sup> 7 – 17	Removal of organics & colour from water.
		820 (Type 2)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	54 – 61	40 (OH <sup>-</sup> )	1.0	Cl <sup>-</sup> to OH <sup>-</sup> 10 – 15	Demineralisation in co-current and countercurrent mode.
	WBA	Macroporous	850	Styrene DVB	-NR <sub>2</sub> -N <sup>+</sup> R <sub>3</sub>	Free base	0.3 – 1.2	47 – 55 (Cl <sup>-</sup> )	60	1.5	FB to hydrochloride 25 max
<b>Cation Exchange Resins</b>											
SAC	Gel	220 Na	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	50 – 55	120	1.8	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	Standard grade cation exchange resin for water softening.
		225 Na	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	43 – 50	120	2.0	Na <sup>+</sup> to H <sup>+</sup> 6 – 10	Premium grade cation exchange resin for water softening.
		225 H	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	49 – 55	120	1.8	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	Premium grade cation exchange resin for demineralisation.
		325 H (MB)	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	47 – 54	120	1.9	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	Premium grade cation exchange resin for use in mixed bed.
		222 Na	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	47 – 53	120	1.92	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	Premium grade cation exchange resin for water softening.

\*meq/dry g

SAC: Strong Acid Cation, SBA: Strong Base Anion, WBA: Weak Base Anion, WAC: Weak Acid Cation, SPL: Speciality

# INDION® Ion Exchange Resins

## Properties and Applications - Summarised Data

Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications	
<b>Industrial Water Treatment</b>											
<b>Cation Exchange Resins</b>											
SAC	Gel	225 Na F	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	43 – 50	120	2.0	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	In the treatment of foodstuffs, beverages, potable water and water used in the processing of food. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.
		222 Na F	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	47 – 53	120	1.92	Na <sup>+</sup> to H <sup>+</sup> 8 approx.	In the treatment of foodstuffs, beverages, potable water and water used in the processing of food. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.
		222 Na BL	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	46 – 51	120	1.9	-	Solvent free cation – in the treatment of foodstuffs, beverages, potable water and water used in the processing of food.
		303	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	55 – 60	120	1.8 (Na <sup>+</sup> )	Na <sup>+</sup> to H <sup>+</sup> 6 approx	Colour indicating resin Colour changes at the time of exhaustion.
	Macroporous-SPL	730	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	54 – 57	120	1.7 (Na <sup>+</sup> )	-	Recovery of metals from aqueous and non-aqueous streams.
		790	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	51 – 55	120	1.9 (Na <sup>+</sup> )	Na <sup>+</sup> to H <sup>+</sup> 2 – 6	Demineralisation in co-current, countercurrent mode and condensate water treatment.
WAC	Gel	236	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	46 – 54	120	4.0	H <sup>+</sup> to Na <sup>+</sup> 80 – 120	Removal of alkaline hardness from water.
	Macroporous	662	Methacrylic DVB	-COO <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	44 – 50	100	3.8	H <sup>+</sup> to Na <sup>+</sup> 70 max	Removal of alkaline hardness from water.
<b>Mixed Bed Resins</b>											
		MB 6 SR	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	Super-regenerated mixture of cation and anion for producing ultrapure water.
		MB – 11	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	1:1 volume ratio of cation in H <sup>+</sup> and anion in OH <sup>-</sup> to produce high purity demineralised water.
		MB – 12	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	1:2 stoichiometrically equivalent volume ratio of cation in H <sup>+</sup> and anion in OH <sup>-</sup> to produce high purity demineralised water.
		MB – 115	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	40:60 volume ratio of cation and anion to produce high purity demineralised water.
		RPI	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	Non-regenerable mixed bed application where highest quality water is required. Colour changes at the time of exhaustion.
		MB 151	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	Non-regenerable EDM application
		MB 1150 HP	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	Production of high purity water in electronic & pharma industry.
<b>Oil Removal Resin</b>											
SPL	Oleophilic	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	35 – 41	120	1.6 to 1.7	-	Oil removal from steam condensate of petroleum refineries, petroleum products & water contaminated with hydrocarbon.	

\*meq/dry g

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Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications	
<b>Potable Water Treatment</b>											
<b>Polyiodide Resin</b>											
SPL	SRCD I	Crosslinked Polymer impregnated with iodine	-N <sup>+</sup> R <sub>3</sub>	I <sub>3</sub> <sup>-</sup>	0.3 – 1.2	-	15 – 35	-	-	Disinfection of potable water.	
SPL	222 Na NS	Crosslinked Polystyrene	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	43 – 49	120	1.9	-	Water softening application. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.	
<b>Arsenic and Iron Removal Resin</b>											
SPL	ASM	Crosslinked Polystyrene	-	-	0.3 – 1.2	47 – 54	60	0.5 - 2.0 g As/l	-	Removal of Arsenic from potable water. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.	
	ISR	Crosslinked Polystyrene	-	-	0.3 – 1.2	46 – 54	40	-	-	Removal of dissolved iron from water. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.	
<b>Fluoride Removal Resin</b>											
SPL	RS-F	Styrene DVB	NA	-	0.3 – 1.2	50 – 60	60	-	-	Removal of fluoride from potable water.	
WAC	Microporous	266	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	46 – 54	120	4.2	H <sup>+</sup> to Na <sup>+</sup> 65 max Removal of alkaline hardness from water.	
<b>Cation Exchange Resins</b>											
SAC	Gel	225 Na F	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	43 – 50	140	2.0	Na <sup>+</sup> to H <sup>+</sup> 8 – 10 High purity food grade resin for treatment of potable water and food stuff. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.	
		2250 Na F	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	43 – 50	140	2.0	Na <sup>+</sup> to H <sup>+</sup> 8 – 10 High purity CPS food grade resin for treatment of potable water & food stuff.	
<b>Anion Exchange Resins</b>											
SBA	Macroporous	NSSR (Type 1)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	45 – 55	100 (Cl <sup>-</sup> )	0.9	Cl <sup>-</sup> to NO <sub>3</sub> <sup>-</sup> Negligible Selective removal of nitrates from water. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.	
<b>Oxidation, Reduction Catalyst</b>											
SPL	ORC	-	-	-	0.3 – 1.2	-	-	-	-	Removal of halogens and oxidising agents.	
<b>Nuclear Grade Resins</b>											
<b>Cation Exchange Resins</b>											
SAC	Gel	223 H NG	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	47 – 54	120	1.9	-	High purity ion exchange resin (in hydrogen form) for use in nuclear power plants.
		2230 H NG	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	47 – 54	120	1.9	-	High purity CPS ion exchange resin (in hydrogen form) for use in nuclear power plants.
		223 Li	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Li <sup>+</sup>	0.3 – 1.2	47 – 53	120	1.9	-	High purity ion exchange resin (in lithium form) for use in nuclear power plants.
<b>Anion Exchange Resins</b>											
SBA	Gel	ARU 104	Crosslinked Polystyrene	N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	40 – 44	80	1.6	-	Recovery of uranium from leach liquors.
		GS 300 NG	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	OH <sup>-</sup>	0.3 – 1.2	60 max	60	1.1	-	High strength strong base anion resin (Type I) for use in nuclear power plants.

\* meq/dry g

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## Properties and Applications - Summarised Data

Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications	
<b>Nuclear Grade Resins</b>											
<b>Anion Exchange Resins</b>											
SBA	Gel	GS 3000 NG	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	OH <sup>-</sup>	0.3 – 1.2	60 max	60	1.1	-	High strength CPS strong base anion resin (Type I) for use in nuclear power plants.
		GS 80	Crosslinked Polystyrene	-N <sup>+</sup> R <sub>3</sub>	-SO <sub>3</sub> <sup>-</sup>	0.3 – 1.2	47 – 55	-	0.8	-	Oxygen scavenging.
<b>Mixed Bed Resins</b>											
	Mixed Resins	CAM – 14	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	1:4 volume mixture of cation and anion to produce high purity alkaline water for use in nuclear power plants.
		CAM – 19	Styrene DVB	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>3</sub>	Li <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	1:9 volume mixture of cation and anion. Used in nuclear power plants.
<b>Catalyst Grade Resins</b>											
<b>Cation Exchange Resins</b>											
SAC	Macroporous	140	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.42 – 1.2	<1	150	4.8*	-	Catalyst for organic reactions like esterification etc.
		130	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.42 – 1.2	<1	150	4.8*	-	Catalyst grade resin for esterification and alkylation reactions.
		190	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.42 – 1.2	<1	150	4.7*	-	Premium catalyst for specialised applications such as esterification, alkylation etc.
	Gel	770	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	63 – 66	120	1.4	-	Catalyst for manufacture of butyl acetate, ethylacetate, olefin hydration & bisphenol A.
<b>Anion Exchange Resins</b>											
WBA	Macroporous	860	Styrene DVB	-NR <sub>2</sub> -N <sup>+</sup> R <sub>3</sub>	Free base	0.3 – 1.2	52 – 56 (Cl <sup>-</sup> )	60	1.4	FB to hydrochloride 25 max	As catalyst in aldolization reactions.
<b>Hydrometallurgy</b>											
<b>Chelating Resins</b>											
		MSR	Styrene DVB	Thiol	H <sup>+</sup>	0.3 – 1.2	38 – 43	60	3.6*	-	Selective adsorption of bivalent mercury from industrial effluents.
		TCR	Styrene DVB	Thio-Uronium	H <sup>+</sup>	0.3 – 1.2	41 – 47	80	1.6	-	Selective recovery of mercury and precious metals.
		BSR	Styrene DVB	Amino Phosphonic	Na <sup>+</sup>	0.42 – 1.2	60 – 70	80	2.0 (H <sup>+</sup> )	H <sup>+</sup> to Na <sup>+</sup> <45 H <sup>+</sup> to Ca <sup>++</sup> <20	Decalcification of secondary brine in chloralkali industry.
		SIR	Styrene DVB	Iminodiacetic	Na <sup>+</sup>	0.3 – 1.2	52 – 58	90	0.9	-	Extraction and recovery of metals, removal of heavy metals from various organic or inorganic chemical products.
<b>Cation Exchange Resins</b>											
SAC	Macroporous	790	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	51 – 55	120	1.9 (Na <sup>+</sup> )	Na <sup>+</sup> to H <sup>+</sup> 2 – 6	Recovery of metals from aqueous and non-aqueous streams.
		730	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	54 – 57	120	1.7 (Na <sup>+</sup> )	-	Recovery of metals from aqueous and non-aqueous streams.
		740	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	64 – 68	120	1.3 (Na <sup>+</sup> )	-	Recovery of metals from aqueous and non-aqueous streams.
WAC	Gel	236	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	46 – 54	120	4.0	H <sup>+</sup> to Na <sup>+</sup> 80 – 120	Recovery of metals from aqueous and non-aqueous streams.

\*meq/dry g

SAC: Strong Acid Cation, SBA: Strong Base Anion, WBA: Weak Base Anion, WAC: Weak Acid Cation, SPL: Speciality

# INDION® Ion Exchange Resins

## Properties and Applications - Summarised Data

Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications	
<b>Chemical Process Application</b>											
<b>Anion Exchange Resins</b>											
SBA	Macroporous	830 S (Type 1)	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	57 – 66	80 (Cl <sup>-</sup> )	0.95	Cl <sup>-</sup> to OH <sup>-</sup> 7 – 17	Removal of colour bodies from sugar syrup and other process streams. This product conforms to NSF / ANSI standard 61 & is certified with GOLD SEAL from WQA.
		930 A (Type 1)	Crosslinked Polyacrylic	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	0.3 – 1.2	65 – 72	80 (Cl <sup>-</sup> )	0.8	Cl <sup>-</sup> to OH <sup>-</sup> 10 – 15	Removal of high level of colour bodies from sugar syrup.
WBA	Macroporous	860 S	Styrene DVB	-N <sup>+</sup> R <sub>2</sub> -N <sup>+</sup> R <sub>3</sub>	Free base	0.3 – 1.2	50 – 58 (Cl <sup>-</sup> )	60	1.3	FB to hydrochloride 25 max	Weak base anion resin with high osmotic stability for treatment of non-aqueous solution such as deashing of glucose, dextrose, sorbitol, gelatin & purification of MSG.
		870	Styrene DVB	-N <sup>+</sup> R <sub>2</sub>	Free base	0.3 – 1.2	47 – 55 (Cl <sup>-</sup> )	60	0.95	FB to hydrochloride 25 max	Deacidification of process streams.
		890	Styrene DVB	-N <sup>+</sup> R <sub>2</sub> -N <sup>+</sup> R <sub>3</sub>	Free base	0.3 – 1.2	52 – 56	60	1.4	-	Removal of strong acids in non water, pharma & speciality applications.
<b>Cation Exchange Resins</b>											
SAC	Macroporous	790	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	51 – 55	120	1.9	Na <sup>+</sup> to H <sup>+</sup> 2 – 6	Special grade cation exchanger for applications demanding higher oxidation stability such as gelatin purification, heavy metal removal etc.
		525	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	44 – 49	120	1.95	Na <sup>+</sup> to H <sup>+</sup> 6 – 9	Special grade cation exchanger for use in layered bed and for mixed bed condensate polishing.
WAC	Macroporous	652	Methacrylic acid DVB	COO <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	47 – 55	100	3.5	H <sup>+</sup> to Na <sup>+</sup> 75 min	Ideal for the uptake of toxic undesirable heavy metals and temporary hardness from process liquor and industrial waters.
	Gel	236 P	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	0.3 – 1.2	46 – 54	120	4	H <sup>+</sup> to Na <sup>+</sup> 80 – 120	Removal of alkaline hardness from water
<b>Mixed Bed Resins</b>											
		GMW 11 (GVI)	Crosslinked Polystyrene	-SO <sub>3</sub> <sup>-</sup> -N <sup>+</sup> R <sub>2</sub>	H <sup>+</sup> OH <sup>-</sup>	0.3 – 1.2	-	60	-	-	Specially developed mix of resins for use in electroplating applications. Colour changes at the time of exhaustion.

\* meq/dry g

SAC: Strong Acid Cation, SBA: Strong Base Anion, WBA: Weak Base Anion, WAC: Weak Acid Cation, SPL : Speciality

# INDION® Ion Exchange Resins

## Properties and Applications - Summarised Data

Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications
<b>Pharmaceutical Grade Resins</b>										
SPL	204	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	< 0.15	≤5	-	10.0*	-	Taste masking of bitter drugs such as Norfloxacin, Ofloxacin, Roxithromycin, Dicyclomin Hydrochloride, Famotidine etc.
	214	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	< 0.15	≤5	-	10.0*	-	Taste masking of bitter drugs such as Azithromycin etc.
	224	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.2 – 1.2	≤3	-	4.8*	-	Sustained release agent in drug formulations.
	234	Crosslinked Polyacrylic	-COO <sup>-</sup>	K <sup>+</sup>	< 0.15	≤10	-	-	-	Taste masking of bitter drugs such as Ciprofloxacin, Chloroquin Phosphate etc. as well as tablet disintegration.
	234 S	Crosslinked Polyacrylic	-COO <sup>-</sup>	K <sup>+</sup>	< 0.075	≤10	-	-	-	Taste masking of bitter drugs as well as tablet disintegration.
	244	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	< 0.15	≤10	-	4.5*	-	Sustained release agent in drug formulations.
	254	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	< 0.15	≤10	-	-	-	Sustained release agent in drug formulations.
	264	Crosslinked Polyacrylic	-COO <sup>-</sup>	H <sup>+</sup>	< 0.15	≤5	-	10.0*	-	Stabilisation of Vitamin B <sub>12</sub> .
	284	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Na <sup>+</sup>	0.3 – 1.2	≤70	-	1.0	-	Sustained release agent in drug formulations.
	294	Crosslinked Polymethacrylic	-COO <sup>-</sup>	K <sup>+</sup>	< 0.15	≤10	-	-	-	Tablet disintegrant/taste masking. Product meets specifications of Polacrillin Potassium, USP .
	404	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	Ca <sup>++</sup>	< 0.15	≤8	-	-	-	Treatment of hyperkalaemia.
	414	Crosslinked Polyacrylic	-COO <sup>-</sup>	K <sup>+</sup>	< 0.15	≤10	-	-	-	As super-disintegrant in mouth disperse tablets, iron & calcium pellets etc.
	454	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	Cl <sup>-</sup>	>0.075 – 45% <0.15 – 1%	≤12	-	1.8 – 2.2**	-	Cholestyramine resin – used for lowering serum cholesterol levels. Taste masking, drug stabilization, controlled release & active ingredient.
464	Crosslinked Polymethacrylic	-COO <sup>-</sup>	H <sup>+</sup>	< 0.15	≤5	-	9.5*	-	Nicotine taste masking.	

\* meq/dry g

\*\* sodium glycocholate exchange capacity

SPL : Speciality

# INDION® Ion Exchange Resins

## Properties and Applications - Summarised Data

Resin Type	INDION Designation	Matrix Type	Functional Group	Standard Ionic Form	Particle Size mm	Moisture Content %	Maximum Operating Temperature °C	Total Exchange Capacity meq/ml	Reversible Swelling %	Applications
<b>Adsorbent Grade Resins</b>										
SPL	PA 500	Styrene DVB	-	-	0.3 – 0.85	63 – 67	150	-	-	High surface area polymers for recovering non-polar substances from aqueous and non aqueous streams.
	PA 600	Styrene DVB	-	-	0.3 – 0.85	55 – 65	130	-	-	High surface area polymers for recovering non-polar substances from aqueous and non aqueous streams.
	PA 800	Styrene DVB	-	-	0.3 – 1.2	54 – 60	150	-	-	High surface area polymers for recovering non-polar substances from aqueous and non aqueous streams.
<b>Biodiesel Manufacture &amp; Purification</b>										
SPL	190	Styrene DVB	-SO <sub>3</sub> <sup>-</sup>	H <sup>+</sup>	0.42 – 1.2	<1	150	4.7*	-	Esterification of FFA.
	BF 100	Styrene DVB	-N <sup>+</sup> R <sub>3</sub>	OH <sup>-</sup>	0.3 – 1.2	63 – 75	-	0.9	-	Purification of raw bio-diesel to remove residual FFA from 0.5 - 1.0% to less than 0.1%.
	BF 170	Styrene DVB	Acidic	-	0.3 – 1.2	≤3	-	-	-	Purification of raw bio-diesel for removal of glycerine, soap, moisture etc.

\* meq/dry g

SPL : Speciality

For more information visit us at : [www.ionresins.com](http://www.ionresins.com)

We offer several other speciality resins for a wide variety of applications. These include fine mesh resins for chromatographic separations; dessicant grade resins for moisture removal from solvents & resins for peptide synthesis.



## Packing for **INDION®** Resins

Moist Resins		Dry Resins	
HDPE liner bags	25 / 50 lts	<b>Dry Beads</b>	
LDPE liner bags	0.5 cft / 1 cft / 25 lts	HDPE carbouys with	
Super sack	1000 lts / 35 cft	inner double plastic liner bags	25 / 50 kgs
MS drums with liner bags	180 lts		
Fibre drums with liner bags	7 cft	<b>Dry Powders</b>	
PVC Jars with liner bags	5 / 6 lts	HDPE carbouys with	
HDPE drums with liner bags	50 / 100 / 180 lts	inner double plastic liner bags	6 / 20 / 40 kgs

## Protection of Ion Exchange Resins during Storage

Ion exchange resins, supplied in dry or moist condition, require proper care at all times. Always keep the resins drums / bags closed and in shade at a temperature between 10°C and 40°C.

**Moist Resins:** Resins which are supplied in moist condition must never be allowed to dry. Regularly open the drums / bags and check the condition of the resins. If the resin is not moist enough, add demineralised water to keep it in completely moist condition.

**Dry Resins:** Resins which are supplied as dry beads or dry powders should never be allowed to come in contact with moisture.

## Measurement

**Moist Resins:** All water treatment resins and resins supplied in moist condition are generally sold on volume basis. The volume is measured in a column after backwashing, settling and draining of water to the bed surface.

**Dry Resins:** All dry resins are sold on weight basis.

## Warning

Strong oxidising agents such as nitric acid, degrade ion exchange resins to a considerable extent. This may result in an explosive reaction. Thus, before using strong oxidising agents, consult sources knowledgeable in the handling of such material.

**All manufacturing units are ISO 9001 & 14001 certified. Our Patancheru unit is also OHSAS 18001 certified.**

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. Please contact our regional / branch offices for current product specifications.

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

# ION EXCHANGE (INDIA) LTD.

### Corporate Office

Ion House, Dr. E. Moses Road,  
Mahalaxmi, Mumbai 400 011  
Tel: +91 22 3989 0909 | Fax: +91 22 2493 8737  
E-mail: [ieil@ionexchange.co.in](mailto:ieil@ionexchange.co.in)

### International Division

R -14, T.T.C MIDC, Thane - Belapur Road,  
Rabale, Navi Mumbai 400 701  
Tel: +91 22 3989 0909 / 3913 2400 | Fax: +91 22 2769 7918  
E-mail: [export.sales@ionexchange.co.in](mailto:export.sales@ionexchange.co.in)

## OFFICES

Regional	Telephone	Fax	E-mail
Chennai	+91 44 3989 0909 / 3910 2900	+91 44 2815 3361	<a href="mailto:checro@ionexchange.co.in">checro@ionexchange.co.in</a>
Delhi	+91 11 3989 0909 / 3054 3200	+91 11 2577 4837	<a href="mailto:delcro@ionexchange.co.in">delcro@ionexchange.co.in</a>
Kolkata	+91 33 3989 0909 / 3043 3400	+91 33 2400 4345	<a href="mailto:calcro@ionexchange.co.in">calcro@ionexchange.co.in</a>
Vashi	+91 22 3989 0909 / 3913 2300	+91 22 2788 9839	<a href="mailto:mumcro@ionexchange.co.in">mumcro@ionexchange.co.in</a>
Branch			
Bengaluru	+91 80 2204 2888		<a href="mailto:bngcro@ionexchange.co.in">bngcro@ionexchange.co.in</a>
Bhubaneswar	+91 674 326 9525 / 257 1491		<a href="mailto:bbcro@ionexchange.co.in">bbcro@ionexchange.co.in</a>
Chandigarh	+91 172 274 5011	+91 172 274 4594	<a href="mailto:delcro@ionexchange.co.in">delcro@ionexchange.co.in</a>
Hyderabad	+91 40 3066 3101 / 02 / 03	+91 40 3066 3104	<a href="mailto:hydcro@ionexchange.co.in">hydcro@ionexchange.co.in</a>
Lucknow	+91 522 319 9911	+91 11 2577 4837	<a href="mailto:lko.general@ionexchange.co.in">lko.general@ionexchange.co.in</a>
Vadodara	+91 265 302 7489 / 90	+91 265 2352 932	<a href="mailto:brdcro@ionexchange.co.in">brdcro@ionexchange.co.in</a>
Visakhapatnam	+91 891 324 6253		<a href="mailto:sales.vizag@ionexchange.co.in">sales.vizag@ionexchange.co.in</a>

Factories: Ankleshwar | Hosur | Patancheru | Rabale | Verna

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