



Chemical



Tulsion® Ion Exchange Resins

Summarized Data Sheet

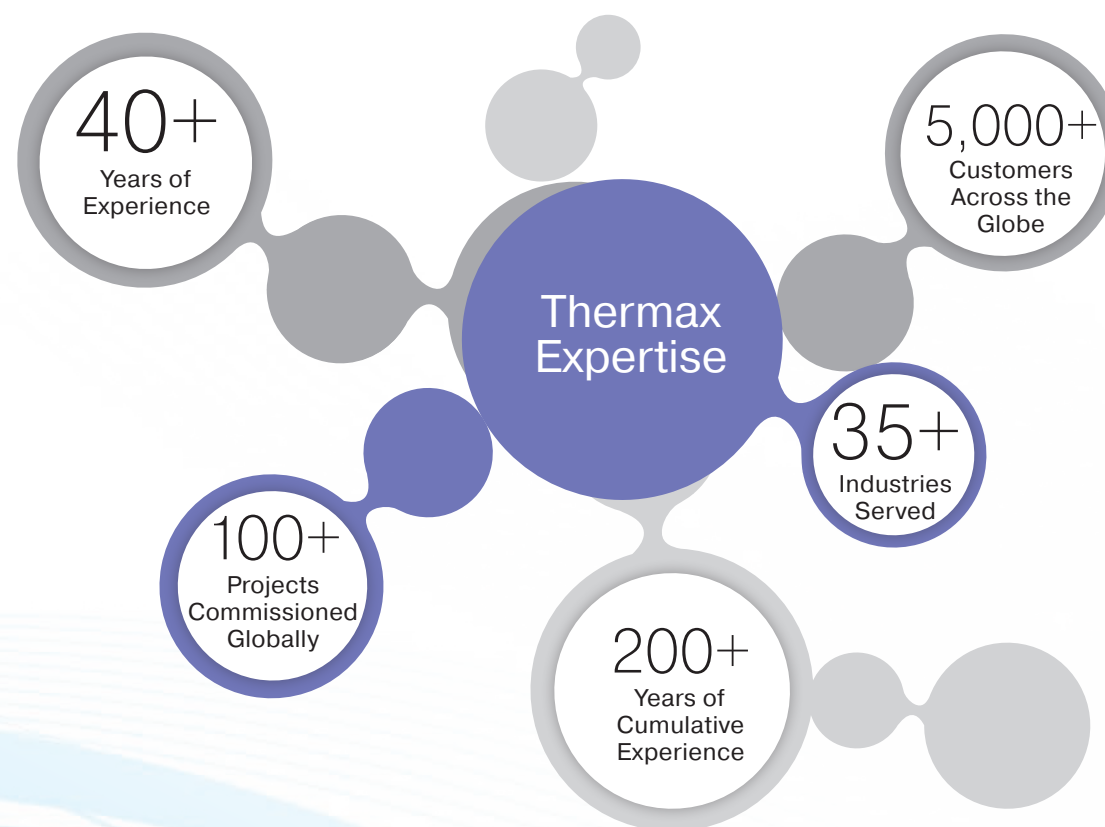
About Thermax

Thermax is a leading conglomerate in the energy and environment space and a trusted partner in energy transition. Thermax's extensive portfolio includes clean air, clean energy, clean water and chemical solutions. Backed by its longstanding industry partnerships across multiple sectors, Thermax has cultivated strong expertise in audit, consulting, execution, and maintenance coupled with digital solutions, ensuring a unified energy-management experience.

Leveraging its distinctive engineering capabilities, Thermax converts costs to profits while protecting the environment – a win-win for the industry and society at large. Thermax operates 14 manufacturing facilities across India, Europe, and Southeast Asia and has 37 Indian and international subsidiaries.

Thermax Chemicals is Asia's leading manufacturer of Tulsion® ion exchange resins.

Our business is about providing 'effective customer solutions' through innovation and development, service and co-operation, reliability, commitment, and customer-centricity. Our dynamic teams focus their energy and resources to offer the very best solutions for customers' needs.



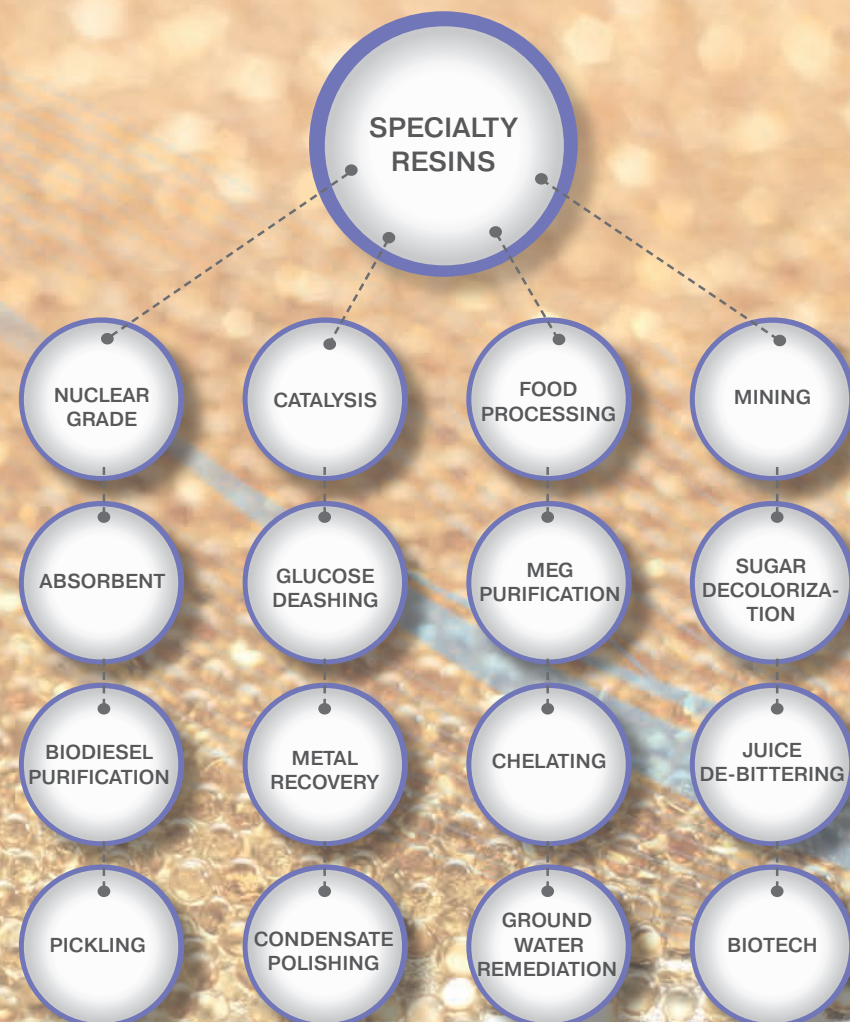
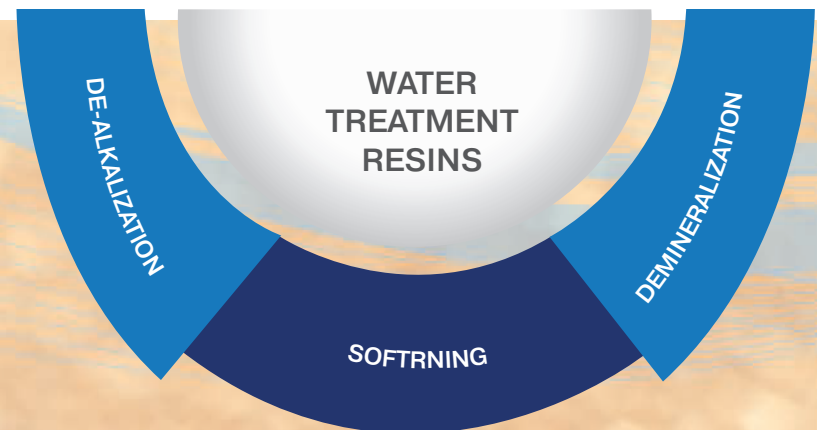
A COMMITMENT TO QUALITY

Every batch of Tulsion Ion Exchange resin is manufactured under carefully controlled process parameters and follows a rigorous quality assurance protocol covering every raw material, intermediate stage products and all batches of the final product. All the engineers, operators and scientists take great care in processing every batch of resin to ensure that the produced lot of resin meets the high standard of quality that we specify and commit to the customer.

Every Tulsion Ion exchange resin product is developed by a team of experienced R&D scientists, manufactured by qualified production engineers, inspected by ever cautious QAC chemists and commissioned by expert technical services group so that the customers can use them without any hassles over a longer period of time.

We are proud to be a company that develops and supplies customer specific products with tailor made specifications on exclusive basis for a variety of end applications.

We believe greatly in system oriented working style, safe working conditions as well as environmental safety. As an obvious result, Thermax's chemical division manufacturing facility is certified for ISO 9001: 2015, ISO 14001: 2015 and ISO 45001: 2018.



Thermax
Quality is Our Commitment
Chemical Division

QUALITY POLICY

We the Chemical Division of Thermax limited, hereby commit to design, develop, manufacture, deliver and apply ion exchange Resins, specialty and performance chemicals in oil field, fuel and water management, in order to meet customer expectations.

We are committed to comply with the relevant requirements, needs and expectations of the external & internal interested parties, associated risks and opportunities.

Further, we are committed to comply with the requirements of ISO 9001 and continually improve the effectiveness of the Quality Management System by establishing and reviewing our quality objectives.

We shall ensure that the Quality Policy is communicated to and understood by all our employees. This policy shall be reviewed periodically for its continuing suitability.

QUALITY OBJECTIVES

Our Quality Objectives:

1. To implement, maintain and continually improve Quality System as per requirements of the Quality Standard of ISO 9001.
2. To achieve consistent Quality.
3. To enhance customer satisfaction.
4. To improve the effectiveness of existing processes.
5. To innovate products & processes to meet the customer needs.

Thermax
Quality is Our Commitment
Chemical Division

ISO Certification

NSF
REGISTERED
FACILITY

ISO 14001:2015 & ISO 45001:2018

ISO 9001:2015

The World is Our Oyster

SOFTENING CATION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ ml. (min)	Backwash Settled Density lbs/ cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
T-42	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Sodium	16-50	0.3-1.2	280/140	0-14	2.0	51-53 810-850	Na ⁺ →H ⁺ 7	45±3	High capacity gel cation exchange resin, with optimum operating capacities.	Industrial and domestic softening at relatively low regeneration costs.
T-52	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Sodium	16-50	0.3-1.2	280/140	0-14	2.1	52-54 830-860	Na ⁺ →H ⁺ 6	43±3	High capacity gel cation exchange resin, with high operating capacities.	Domestic softening for chlorinated water.
CXO-9 Na	Weak Acid	Polyacrylic Copolymer	Carboxylic	Sodium	16-50	0.3-1.2	210/100	5-14	4	42-44 670-710	H ⁺ Na ⁺ 100	47±3	High capacity acrylic weak acid cation exchange resin with excellent physical and chemical stability.	Industrial and domestic softening at relatively low regeneration costs.

DEMINERALIZATION CATION EXCHANGE RESINS

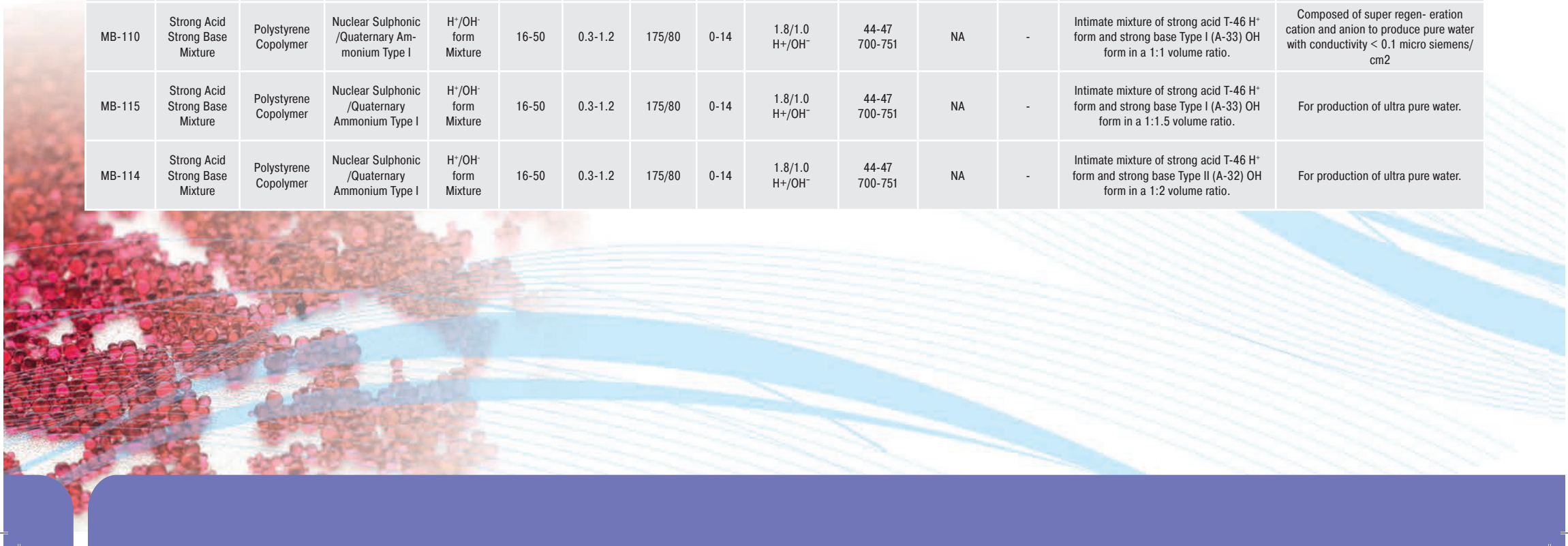
Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ ml.(min)	Backwash Settled Density lbs/ cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
T-42	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.8	0-52 H ⁺ 800-840 H ⁺	Na ⁺ →H ⁺ 7	52±3	High capacity gel cation exchange resin with excellent physical and chemical properties.	Softening, multiple and mixed bed demineralisation, dealkalization, chemical processing etc.
CXO-9	Weak Acid	Polyacrylic Copolymer	Carboxylic	Hydrogen	16-50	0.3-1.2	210/100	5-14	4.0	42-44 Na ⁺ 670-710 Na ⁺ 46-48 H ⁺ 730-770 H ⁺	H ⁺ →Na ⁺ 100	47±3	High capacity acrylic weak acid cation exchange resin with excellent physical and chemical stability.	Water deionization, selective heavy metal removal. Softening of high salinity waters in sodium cycle.
CXO-12	Weak Acid	Polyacrylic Copolymer	Carboxylic	Hydrogen	16-50	0.3-1.2	210/100	5-14	4.2	47-49 750-790	H ⁺ →Na ⁺ 75	45±3	High capacity acrylic weak acid cation exchange resin with excellent physical and chemical stability	Water deionization, dealkalization selective heavy metal removal. Softening of high salinity waters in sodium cycle.
CXO-12 MP	Weak Acid	Polyacrylic Copolymer	Carboxylic	Hydrogen	16-50	0.3-1.2	210/100	5-14	4.1	47-49 750-790	H ⁺ →Na ⁺ 70	47±3	Macropous acrylic weak acid cation exchange resin with excellent physical and chemical stability.	Water deionization, dealkalization selective heavy metal removal. Softening of high salinity waters in sodium cycle.
T-54	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	2.0	50-52 800-840	Na ⁺ →H ⁺ 6	52±3	High capacity gel cation exchange resin, with optimum operating capacities	Softening, multiple and mixed bed demineralisation, dealkalization, chemical processing etc.
T-52	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.9	50-52 800-840	Na ⁺ →H ⁺ 7	48±3	High capacity gel cation exchange resin, with optimum operating capacities	Softening, multiple and mixed bed demineralisation, dealkalization, chemical processing etc.
CXO-14 MP H	Weak Acid	Polystyrene Copolymer	Carboxylic	Hydrogen	16-50	0.3-1.2	210/100	5-14	2.6	47-49 750-790	H ⁺ →Na ⁺ 70	56±3	Macropous acrylic weak acid cation exchange resin with excellent physical and chemical stability.	Water deionization, dealkalization selective heavy metal removal. Softening of high salinity waters in sodium cycle.

DEMINERALIZATION ANION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ml. (min)	Backwash Settled Density lbs/cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
A23P	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Chloride	16-50	0.3-1.2	175/80	0-14	1.25	42-44 670-710	Cl ⁻ →OH ⁻ 25	53±3	Porous strong base type I anion exchange resin. Excellent physical and chemical properties.	Multiple and mixed bed deionization, silica removal.
A-32	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type II	Chloride	16-50	0.3-1.2	140/60	0-14	1.3	43-45 690-720	Cl ⁻ →OH ⁻ 12	47±3	Tough gel, Type II strong base anion exchange resin. Excellent physical and chemical properties.	Multiple bed deionization
A-27 MP	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Chloride	16-50	0.3-1.2	175/80	0-14	1.2	42-44 670-710	Cl ⁻ →OH ⁻ 9	58±3	Macroporous strong base type I anion exchange resin with excellent physical and chemical stability and resistance to organic fouling	Multiple bed deionization, delalkalization and silica removal.
A-27 Gel	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Chloride	16-50	0.3-1.2	140/60	0-14	1.3	42-44 670-710	Cl ⁻ →OH ⁻ 9	50±3	Tough gel, strong base type I anion exchange resin. Excellent physical and chemical properties.	Multiple mixed bed deionization silica removal also applied in stream purification along with Tulsion T -42.
A-36 Gel	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type II	Chloride	16-50	0.3-1.2	105/40	0-14	1.3	43-45 690-720	Cl ⁻ →OH ⁻ 9	48±3	High efficient & durable type II, strong base exchange resin having excellent operating capacity & regeneration efficiency at equivalent regeneration level.	Besides its primary application in water treatment it is also used in de-alkalization process.
A-36 MP	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type II	Chloride	16-50	0.3-1.2	140/60	0-14	1.2	42-44 670-710	Cl ⁻ →OH ⁻ 9	50±3	Macroporous strong base type II anion exchange resin having high regeneration efficiency and resistance to organic fouling.	Multiple bed deionization, dealkalization.
A-2X MP	Weak Base	Polystyrene Copolymer	Tertiary Amine	Free Base	16-50	0.3-1.2	175/80	0-9	1.5	40-42 640-670	FB ⁻ →Cl ⁻ 20	47±3	Macroporous weak base anion exchange resin, excellent regeneration efficiency. Resistance to organic fouling.	Deionization of high EMA waters.
A-10X MP	Weak Base	Polyacrylic Copolymer	Polyamine	Free Base	16-50	0.3-1.2	140/60	0-9	2.5	43-45 690-720	FB ⁻ →Cl ⁻ 23	52±3	Macroporous acrylic weak base anion exchange resin with high organic removal efficiency.	Deacidification and deionization of high EMA, high organics water.
A-20 X Gel	Weak Base Anion	Polyacrylic Copolymer	Tertiary Amine	Free Base	16-50	0.3-1.2	140/60	0-5	1.6	43-45 690-721	FB ⁻ →Cl ⁻ 24	50±5	Effectively used for treatment of high organic waters.	Used in water treatment applications for the removal of free mineral acids.
A-23	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Chloride	16-50	0.3-1.2	175/80	0-14	1.3	42-44 670-710	Cl ⁻ →OH ⁻ 20	53±3	Tough gel, strong base type I anion exchange resin. Excellent physical and chemical properties.	Multiple and mixed bed deionization, silica removal. Also applied in process with Tulsion T-42.

MIXED BED RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ ml. (min)	Backwash Settled Density lbs/ cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
MB-104	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	Li ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 Li ⁺ /OH ⁻	44-47 700-750	NA	—	Intimate mixture strong acid T-46 Li ⁺ form and strong base A-33 OH ⁻ form containing in a 1:2 volume ratio.	Final polishing of circulating water in nuclear industry.
MB-106	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-750	NA	—	Intimate mixture strong acid T-46 Li ⁺ form and strong base A-33 OH ⁻ form containing in a 1:2 volume ratio.	Final polishing of circulating water in nuclear industry
MB-108 (BG)	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	Free Base (OH) and /H ⁺	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-750	NA	—	High purity mixed bed resin with highly Effective separation. Volume ratio 1:2 (T-46 Black : A-33 Gold).	Used in high purity water applications.
MB-108 P	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-750	NA	—	Intimate mixture of strong acid T-46 H ⁺ form and strong base Type I (A-33) OH ⁻ form in a 1:2 volume ratio.	Used in high purity water applications.
MB-115 (BG)	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-750	NA	—	Intimate mixture of strong acid T-46 H ⁺ form and strong base Type I (A-33) OH ⁻ form in a 1:1.5 volume ratio.	For production of ultra pure water.
MB-1228	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-750	NA	-	Intimate mixture of strong acid T-42 NS H ⁺ form and strong base Type I A-24 OH form in a 1:2 volume ratio.	Ultra pure resins to be used in point of use ultrapure water producing system.
MB-110	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-751	NA	-	Intimate mixture of strong acid T-46 H ⁺ form and strong base Type I (A-33) OH form in a 1:1 volume ratio.	Composed of super regeneration and anion to produce pure water with conductivity < 0.1 micro siemens/cm2
MB-115	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-751	NA	-	Intimate mixture of strong acid T-46 H ⁺ form and strong base Type I (A-33) OH form in a 1:1.5 volume ratio.	For production of ultra pure water.
MB-114	Strong Acid Strong Base Mixture	Polystyrene Copolymer	Nuclear Sulphonic /Quaternary Ammonium Type I	H ⁺ /OH ⁻ form Mixture	16-50	0.3-1.2	175/80	0-14	1.8/1.0 H ⁺ /OH ⁻	44-47 700-751	NA	-	Intimate mixture of strong acid T-46 H ⁺ form and strong base Type II (A-32) OH form in a 1:2 volume ratio.	For production of ultra pure water.



CONDENSATE POLISHING RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ ml. (min)	Backwash Settled Density lbs/ cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
T-48	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	100-400 +100=nil	0.03-0.15	320/160	0-14	4.5 meq/gm	NA	NA	60 ±5	Strong acid cation exchange resin supplied in powder form	Condensate polishing deploying precoat filter process
T-50	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	20-40	0.42-0.85 (85%)	250/120	0-14	1.8	51-53 800-840	Na ⁺ →H ⁺ 7	52±3	Strong acid cation exchange resin having controlled particle size cut.	High flow, deep bed condensate polishing
T-52	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.9	52-54 830-860	Na ⁺ →H ⁺ 6	48±3	Higher cross-linked strong acid cation exchange resin having excellent resistance to oxidizing agents and temperature	Multiple & mixed bed demineralization operating under rigorous conditions
T-42 MP	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen Sodium	16-50	0.3-1.2	250/120 H ⁺ 280/140 Na ⁺	0-14	1.7 Na 1.63H	50-52 H ⁺ 800-830 H ⁺ 52-54 Na ⁺ 830-870 Na ⁺	Na ⁺ →H ⁺ 6	56±3H ⁺ 53±3 Na ⁺	Macroporous strong acid cation exchange resin with excellent physical and chemical characteristics	High flow condensate polishing, continuous ion exchange systems and chemical processing
A-21	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Chloride	20-40	0.42-0.85 (82%)	175/80	0-14	1.3	42-44 670-710	Cl ⁻ →OH ⁻ 20	53±3	Strong base gel Type I anion exchange resin with excellent bead strength and controlled particle size	High flow, deep bed condensate polishing
A-21 MP	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Chloride Carbonate	20-40	0.42-0.85 (82%)	175/80 Cl ⁻	0-14	1.2	42-44 670-710	Cl ⁻ →OH ⁻ 10	58±3	Macroporous strong base Type I anion exchange resin with superior bead strength and controlled particle size.	High flow, deep bed condensate polishing
T-87 MP	Strong Acid	Polystyrene Copolymer	Nuclear sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.95	50-52 H ⁺ 800-840 H ⁺	Na ⁺ →OH ⁺ 10	52±3	Large pore structure with high exchange capacity, Suitable to operate under high pressure	Used for applications of high velocity linear flows in condensate polishing units, also suitable for high pressure CPU units.
A-21 MP (SO4)	Strong Base	Polystyrene Copolymer	Quaternary Amine	SO4	16-50	0.3-1.2	140/60	0-14	1.2	42-44 670-710	Cl ⁻ →OH 9	53±3	High capacity with excellent resistance to attrition and osmotic shock	Used in condensate polishing plants particularly suitable for high pressure CPU units.
T-53	Strong Acid	Polystyrene Copolymer	Nuclear sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	2.1	50-52 H ⁺ 800-840 H ⁺	Na ⁺ →H 6	45±3	High capacity gel cation exchange resin, with high operating capacities	Softening, multiple and mixed bed demineralisation, dealkalization, chemical processing etc.
T-55	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	2.2	50-52 H ⁺ 800-840 H ⁺	Na ⁺ →H 6	45±3	High crosslinked Nuclear grade gel type strong acid cation exchange resin having excellent resistant to oxidizing agents with high operating capacity.	Used in non-regenerable sin- gle bed or mixed bed nuclear system.

CATALYTIC GRADE ION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ml. (min)	Backwash Settled Density lbs/cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
T-56 MP	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.63	52-54 830-870	$\text{Na}^+ \rightarrow \text{H}^+$ 7	56±3	Macroporous catalytic grade strong acid cation exchange resin supplied in wet form. Also supplied in dry form containing moisture less than 2%.	Cataysis of organic reactions in aqueous and non-aqueous media.
T-38	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.4	47-49 750-790	$\text{Na}^+ \rightarrow \text{H}^+$ 11	65±3	High purity, low cross linked strong acid cation exchange.	Catalyst for Bisphenol A reactions.
T-3825	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2 (98%)	250/120	0-14	0.675	43-45 690-720	$\text{Na}^+ \rightarrow \text{H}^+$ 15	79±3	High purity, low cross linked strong acid cation exchange.	Catalyst for Bisphenol A reactions.
T-62MP (Dry)	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-40	0.3-1.2 0.42-1.2 (97%)	265/130	—	4.8 (meq / dry gm)	—	NA	1	Specially developed resin for phenol alkylation.	Phenol Alkayation, Isoboryl acetate synthesis. Reaction of non-polar media.
T-63 MP (Dry)	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-40	0.3-1.2 0.42-1.2 (96%)	265/130	—	4.8 (meq / dry gm)	—	NA	1	High Porosity resin.	Phenol Alkayation, Isoboryl acetate synthesis. Reaction of non-polar media.
T-66MP (Dry)	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-40	0.3-1.2 0.42-1.2 (97%)	265/130	—	5.0 (meq / dry gm)	—	NA	1	Resin with low porosity and high surface area.	phenol Alkayation, for reaction of relatively polar reactants.
T-3830	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	265/130	0-14	3.5	47-49 750-790	$\text{Na}^+ \rightarrow \text{H}^+$ 11	65±3	Promoted catalyst supplied in wet form.	Bisphenol-A synthesis.
A-74 MP	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Hydroxide	16-50	0.3-1.2	175/80	0-14	1.0	42-45 670-720	$\text{Cl}^- \rightarrow \text{OH}^-$ 21	60±3	Macroporous catalytic grade type I strong base anion.	Condensation type of reaction.
A-3003	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Hydroxide	16-50	0.3-1.2	140/60	0-14	1.0	42-44 670-710	$\text{Cl}^- \rightarrow \text{OH}^-$ 20	70±3	Catalytic grade type I strong base anion.	Aldol condensation type reactions.
A-8X MP	Weak Base	Polystyrene Copolymer	Tertiary Amine	Free Base	16-50	0.3-1.2	175/80	0-14	1.3	40-42 640-680	$\text{FB} \rightarrow \text{Cl}^-$ 18	55±3	Macroporous catalytic grade weak base anion exchange resin.	MEG purification and deacidification of aqueous and non-aqueous media.
T-6812 MP (Dry)	Strong acid	Polystyrene copolymer	Nuclear sulphonic	Hydrogen	16 - 40	0.425 - 1.2	265/130	0 - 14	5.2 (meq/gm)	—	—	2	High Porosity resin.	Phenol alkylation, esterification reactions.
T-6812 MP (wet)	Strong Acid	Polystyrene copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.95	50-52 800-840	$\text{Na}^+ \rightarrow \text{H}^+$ 7	52±3	Higher total acid capacity.	especially developed for phenol purification, phenol alkilation and MTBE production.
T-8052 MP	Strong Acid	Polystyrene copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.95	50-52 800-840	$\text{Na}^+ \rightarrow \text{OH}^-$ 8	56±3	Large pore structure with high exchange capacity.	Used in polar and non polar media.
T-6813 MP (wet)	Strong Acid	Polystyrene copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.95	50-52 800-840	$\text{Na}^+ \rightarrow \text{OH}^-$ 9	52±3	Higher total acid capacity.	Especially developed for phenol purification, phenol alkilation and MTBE production.
T- 77 MP	Strong Acid	Polystyrene copolymer	Nuclear Sulphonic	Hydrogen	16-50	0.3-1.2	250/120	0-14	1.75	50-52 800-840	$\text{Na}^+ \rightarrow \text{OH}^-$ 10	52±3	Large pore structure with high exchange capacity.	Used in polar and non polar media.

CATALYTIC GRADE ION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ ml. (min)	Backwash Settled Density lbs/ cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
ADS-400	Polyacrylic adsorbent	Polyacrylic Copolymer	NIL	NA	18-50 18-40 (90%)	0.3-1.0	205/95	0-14	375	43-47 700-750	NA	62±3	High organic removal capacity	Removal of hydrophilic chemicals from Industrial waters
ADS-600	Polystyrenic adsorbent	Polystyrenic Copolymer	NIL	NA	18-50 18-40 (85%)	0.4-1.0	300/150	0-14	550	43-47 700-750	NA	55-60	High organic removal capacity	Removal of hydrophobic chemicals from Industrial waters
ADS-800	Polystyrenic adsorbent	Polystyrenic Copolymer	NIL	NA	18-50	0.3-1.0	300/150	0-14	750	40-44 640-710	NA	53-58	Polystyrene resin with high organic removal capacity	Removal of hydrophobic chemicals from Industrial waters
ADS 800 EP	Polystyrenic adsorbent	Polystyrenic copolymer	NIL	NA	18-50	0.3-1.0	300/150	0-14	750	40-44 640-710	NA	53-58	Polystyrene resin with high organic removal capacity	Removal of hydrophobic chemicals from Industrial waters
PCP-1200	Weak Base	Polystyrene Copolymer	Tertiary Amine	Free base	16-50	0.3-1.2	300/150	0-14	1000	43-47 700-750	NA	63±3	Polystyrene resin with high organic removal capacity	Removal of hydrophobic chemicals from Industrial waters. Liquid glucose decolorization
PCP-540	NA	Polystyrene Copolymer	NIL	NA	16-50	0.3-1.2	300/150	0-14	1150	43-47 700-752	NA	63±3	High organic removal capacity	Removal of hydrophobic chemicals from Industrial waters.

NUCLEAR GRADE ION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ ml. (min)	Backwash Settled Density lbs/ cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
T-46	Strong acid	Polystyrene Copolymer	Nuclear Sulphonic	Lithium Hydrogen	16-50	0.3-1.2	250/120	0-14	1.8 H ⁺	50-52 800-840	Na ⁺ →H ⁺ 7	50±3 52±3	Strong acid cation exchange resin having a minimum of 99% of its exchange sites in H ⁺ /Li ⁺ form with high bead strength.	Treatment of circulating water in nuclear industry
A-33	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type I	Hydroxide	16-50	0.3-1.2	175/80	0-14	1.0	42-44 670-710	Cl ⁻ OH ⁻ 20	70±3	Strong base gel Type I anion exchange resin having minimum 90% of its exchange sites in OH ⁻ form and less than 1% sites in Cl ⁻ form with high bead strength.	Treatment of circulating water in nuclear industry
IANR 333(OH) UPS	Strong Base	Polystyrene Copolymer	Quaternary Ammonium Type 1	Hydroxide	16-50	0.4 to 1.2	140/60	0-14	1.1	42-44 670-710	Cl ⁻ →OH ⁻ 20	65±3	Strong base gel Type I anion exchange resin having minimum 90% of its exchange sites in OH ⁻ form and less than 1% sites in Cl ⁻ form with high bead strength	Treatment of circulating water in nuclear industry
IANR 52 H UPS	Strong cation	Polystyrene copolymer	Nuclear Sulphonic	Hydroxide	16-50	0.4 to 1.2	250/120	0-14	1.9	50-52 800-840	Na ⁺ →H ⁺ 6	48±3	Strong acid cation exchange resin having a minimum of 99% of its exchange sites in H ⁺ /Li ⁺ form with high bead strength.	Treatment of circulating water in nuclear industry

SPECIAL GRADE ION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ml. (min)	Backwash Settled Density lbs/cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
A-62MP	Strong Base	Cross linked polystyrene	Quarternary Ammonium	Chloride	16-50	0.3-1.2	195/90	0-14	1.0	43-47 700-750	—	52±3	Premium grade resin for nitrate removal food grade version for potable water treatment is also available.	Selective removal of nitrate from industrial water and domestic drinking water.
A-23P (Sulphite)	Strong Base	Polystyrene Copolymer	Quarternary Ammonium	Sulfite	16-50	0.3-1.2	140/60	0-14	0.8	42-44 670-710	—	—	For dissolved oxygen removal.	Dissolved oxygen removed for very low conductivity water requirements.
A-30 MP	Strong Base	Cross linked Polyacrylic	Quarternary Ammonium	Chloride	16-50	0.3-1.2	140/60	0-14	0.7	43-47 700-750	—	67±3	Acrylic resin with high organic removal capacity.	Decolorization of aqueous solution, sugar melt Decolorization
A-72 MP	Strong Base	Polystyrene Copolymer	Quarternary Ammonium Type I	Chloride	16-50	0.3-1.2	175/80	0-14	1.0	42-45 670-720	Cl ⁻ →OH ⁻ 20	60±3	Macroporous strong base Type I anion exchange resin with controlled pore size.	Tanin removal from ground water used for color removal from sugar syrup.
A - 722 MP	Strong Base	Polystyrene Copolymer	Quarternary Ammonium Type I	Chloride	16-50	0.4 -1.2	175/80	0-14	1.0	42-45 670-720	Cl ⁻ →OH ⁻ 20	60±3	Macroporous strong base Type I anion exchange resin with controlled pore size.	Used for color removal from sugar syrup.
CH-87	Chelating	Cross linked polystyrene	Flouride selective	—	16-50	0.3-1.2	140/60	7-11	—	52-54 830-860	NA	45±3	Selective removal of fluoride from water	Removal of flouride from domestic drinking water.
CH-90	Chelating	Polystyrene Copolymer	Imminodia-cetic acid	Sodium	16-50	0.3-1.2	175/80	0-14	2.0	45-50 720-790	H ⁺ →Na ⁺ 30 +/- 5%	48±3	Special resin for selective removal of transition metals.	Brine purification in chloro alkali industry.
CH-93	Chelating	Cross linked polystyrene	Amino methyl phosphoric	Sodium	16-50	0.3-1.2	175/80	0-14	2.0	45-50 720-760	H ⁺ →Na ⁺ 35 40%	50±3	Special resin having more pronounced affinity for Ca+& Mg than IDA type resin.	Brine decalcification in chloro alkali industries.
CH-95	Chelating	Polystyrene Copolymer	Isothiouro-nium	Chloride	16-50	0.3-1.2	175/80	0-7	1.25 meq/ml	47-50 760-800	—	50±3	Special resin for selective removal of mercury.	Used for mercury removal from effluent in Chloro -alkali industry.
CH-97	Chelating	Cross linked polystyrene	Methylene thiol	Chloride	16-50	0.3-1.2	140/60	0-14	150 mg Hg/l	42-45 670-720	NA	40±3	Selective removal of mercury, regenerable resin.	Removal of mercury in Chloro -alkali industry.
CH-99	Chelating	Cross linked polystyrene	Polyhydroxy amine	Chloride	16-50	0.3-1.2	175/80	7-11	0.8	43-47 700-750	NA	45±2	Selective removal of Boron.	Removal of Boron from industrial water.
A 72 MP (HP)	Strong Base	Polystyrene Copolymer	Quaternary Ammonium type I	Chloride	16-50	0.3-1.2	175/80	0-14	0.6	42-45 670-720	Cl ⁻ →OH ⁻ 20	70-75	High porosity / High mechanical strength macroporous strong base anion exchange resin.	Removal of colloidal silica. Used in semiconductor, medical & pharmaceutical field
IRR	Chelating Resin	Polystyrene Copolymer	N/A	N/A	16-50	0.3-1.2	175/80	0-14	N/A	42-45 680-720	—	50±5	It is premium grade resin media designed to provide greater matrix porosity & excellent catalytic properties to remove iron from ground water.	Removal of dissolved iron (Fe II) from potable water / ground water.
T-4213 MP	Strong acid	Polystyrene copolymer	Sulphonic	Hydrogen	16-40	0.4 - 1.2	250/120	0-14	1.7	51-53 810-850	H ⁺ →Na ⁺ 10% max.	50± 3	Macroporous cation exchange resin.	Sugar de-ashing.
A-2X MP R	Weak base anion	Cross linked polystyrene	Tertiary amine	Free base form	16-40	0.4 - 1.2	175/80	0-9	1.6	40-44 640-710	FB→Cl ⁻ 20%	47±3	High capacity macroporous weak base anion exchange resin.	Liquid glucose and sorbitol application.

SPECIAL GRADE ION EXCHANGE RESINS

Tulsion®	Type	Matrix Structure	Functional Group	Ionic Form Supplied	Screen Size US Mesh	Particle Size mm (Min. 95%)	Stability Max Temp 0F / 0C	pH Range	Total Exchange Capacity meq/ml. (min)	Backwash Settled Density lbs/cft g/l	Reversible Swelling % Approx	Moisture Content % Approx	Features	Applications
A-201 X MP	Weak Base	Polystyrene Copolymer	Tertiary amine	Free Base	16-50	0.3-1.2	140/60	0-5	1.7	43-45 690-720	FB → Cl 30	45±3	Macroporous Weak Base Anion resin with < 2% strong base capacity.	Used in chemical process of separation of acids from salts.
A-74 MP (SO4)	Weak Base	Polystyrene Copolymer	Quaternary Ammonium Type 1	SO4	16-50	0.3-1.2	140/60	0-14	1	42-44 670-710	Cl⁻ → OH⁻ - 20	65±3	Used for regenerable mix beds in condensate polishing units. This resin has high operating capacity and low rinse requirements. This resin also exhibits better regeneration efficiency.	polishing.
A-630	Strong Base	Polystyrene Copolymer	Quaternary Ammonium	Cl	16-40	0.4-1.2	175/80	0-14	0.65	42-44 670-710	NA	45±3	Porous strong base type I anion exchange resin. Excellent physical and chemical properties.	Multiple and mixed bed deionization, silica removal.
CH-920 GA	Chelating	Polystyrene Copolymer	Spe. Gallium Selective	H	16-50	0.3-1.2	210/100	5-14	1.5	47-49 750-790	NA	12±3	Weak Acid Cation resin with special legend attached to special ligand have higher affinity to Gallium in Bayer Liquor	Used for recovery of Gallium from Bayer Liquor
TFR-93	Weak Acid Cation	Polystyrene Copolymer	phosphonic	Al	16-50	0.3-1.2	210/100	7-11	2.3	45-47 720-760	H⁺ → Na⁺ +35	42±3	Capability of removing fluoride ions to the level as low as below one ppm even from high TDS feed water (>1000 PPM).	Used for selective removal of Fluoride ions from aqueous solutions.
T-202	Strong Acid	Polystyrene Copolymer	Nuclear Sulphonic	H	16-50	0.3-1.2	250/120	0-14	1.75	50-52 800-840	Na⁺ → H⁺ 7	53±3	Strong Acid Cation Resin	Suitable for Biodiesel purification
RCX-5143	WBA	Polystyrene Copolymer	Quaternary Ammonium Type 1	Cl	16-50	0.3-1.2	175/80	0-14	1.2	42-44 670-710	FB → Cl	40±3	Weak Base anion resin with Radium selective functional group	Recovery of radium industrial process effluent
PCR-5320 PFS	SBA	Polystyrene Copolymer	Quaternary Ammonium Type 1	Cl	16-50	0.3-1.2	175/80	0-14	0.6	43-47 710-730	NA	52±3	High organic removal capacity	Suitable for removal perchlorate removal from ground water used for domestic use.
CH-88	Chelating	Polystyrene Copolymer	Nuclear Sulphonic	Al	16-50	0.3-1.2	210/100	0-7	1.8	47-49 750-790	NA	43±	Low EDC fluoride selective chelating resin	Fluoride removal from potable water

TULSION® Ion exchange resins are available in standard packing size as follows:

Fibre Drums	: 7 cft.	Super Sacks	: 1000 ltr.
Polyethylene lined HDPE bags	: 1 cft.	MS Drum	: 180 ltr.
Super Sacks	: 40 cft.	HDPE Drum	: 200 ltr.
Polyethylene lined HDPE bags	: 25 ltr.		

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