



SUNRESIN NEW MATERIALS CO.LTD.

TEL: +86-29-8918 2091

Email: seplite@sunresin.com

Add: No.135, Jinye Rd, Xi'an Hi-tech Industrial Development Zone, Shaanxi 710076 China

SUNRESIN NEW MATERIALS GMBH

Email: seplite_europe@sunresin.com

Add: Johannstrasse 37 40476 Düsseldorf



www.seplite.com

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SUNRESIN NEW MATERIALS CO.LTD.

- INTRODUCTION
- R&D
- OUR SITES



- QUALITY CONTROL
- TECHNICAL SUPPORT
- PRODUCTION CONTROL



SEPLITE® Specialty Resin Categories

- Food Processing
- Health Care
- Chemical Processing
- Hydrometallurgy
- Waste Water & VOCs treatment



SEPLITE® Water Treatment Resins

- IWT/ General DI
- Power Plant
- Ultrapure Water
- Drinking Water
- Packaging Options



SEPLIFE® Products for Life Science

- Resins for Solid Phase Synthesis Carrier
- Resins for Enzyme Carriers
- Chromatography Resins



SEPSOLUT® EQUIPMENT PACKAGE

- Simulated Moving Bed (SMB)
- Fixed Bed (Manual/Automatic)
- Simulated Moving Bed Chromatography (SMBC/SSMB)
- Skid Mounted Unit
- EPC project and Operation support
- Customized Technical Service

SUNRESIN

PROFESSIONAL SEPARATION

INTRODUCTION

Sunresin is an innovation oriented high-tech enterprise, specialized in supplying Ion exchange resins, adsorption & separation resins, equipment solutions and relevant technical services. With over 20 years of manufacturing experience, it is the first listed company in the IER industry (Shenzhen Stock code 300487) which provides a high level of transparency to its customers. Sunresin manufactures more than 50,000M³ of ion exchange resins and adsorbers annually, supplying furthermore customers with hundreds of adsorption and separation equipment. Sunresin's resin portfolio include about 25 product categories and more than 200 different resin types which are broadly used in industries such as: Water and Waste water treatment, Food Processing, Chemical Processing, Biotech, Pharmaceuticals, Plant Extraction, Brine Purification, Hydrometallurgy, as well as Potable Water Treatment among others.

Sunresin is dedicated to the industrialization of newly developed polymeric resins as well as to the exploitation of applications in emerging industries. The core technologies for all special resin products and equipments are of its Independent Intellectual Property Rights. Sunresin is holding more than 50 patents – in China and internationally - and has accomplished more than ten national projects in the area of resin development. Sunresin is certified under ISO 9001 for Quality Control System and ISO14001 for Environment Control System. It has also been awarded with Certificates from WQA, ResAP, WRAS, ACS, Kosher, Halal, CE etc. Under worldwide recognized QC systems, Sunresin provides excellent and high quality products to the market. All of the employed manufacturing processes are strictly controlled by the environmental regulations.

Sunresin focuses on innovation, quality and service. Based on the technical core competences, the rich experience and under strict international standards, Sunresin is providing high quality products, cost-effective equipment as well as professional design and solution to the customers. Sunresin, as a public company, takes the responsibility to lead and drive Ion exchange resin industry towards innovation and clean production.

Sunresin is working to be a world well-known materials provider with resins and solution package.

R&D

Innovation is core element of Sunresin values. R&D contributes to essential impetus to the fast development of Sunresin.

There are 5 teams in the provincial R&D center, while the center is equipped with advanced analytical instruments such as Malvern, Mettler, PE, Agilent etc. Around 300 creative and experienced chemists and engineers are working on improved processes for our existing products and are developing specific solutions for new applications and new products. With the enormous data-base in resin design and one of the top lab facilities in the ion exchange industry, Sunresin is well-prepared to develop and supply tailored made solutions answering customer's requirements.

Sunresin is continuously investing in our technology and facilities to improve product efficiency and new applications to meet today's ever-rising demand for special materials.

OUR SITES

Administration & R&D



Sunresin Park, Headquarter



Sunresin, R&D center

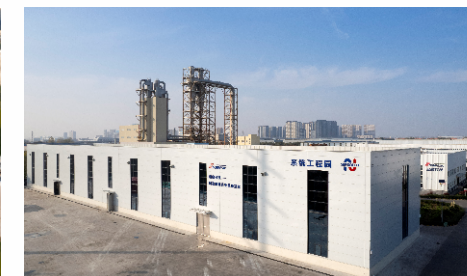


Shaanxi Functional Polymer Materials Innovation Center

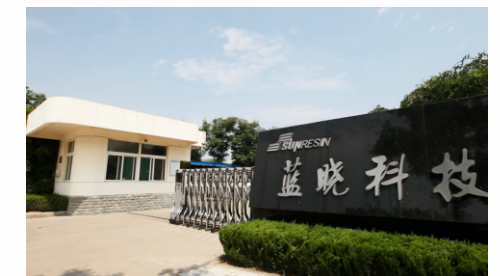
Manufacturing



Sunresin, Gaoling



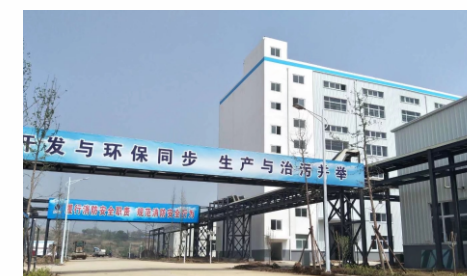
Sunresin, System Engineering Park



Sunresin, Special Resin Factory



Sunresin, Pucheng



Sunresin, Suncycle Hebi



Sunresin, Puritech Belgium



Second Prize for Progress in Science and Technology awarded by the State Council of China

QUALITY CONTROL

With a QC team of professionals, Sunresin maintains a very stringent system of QC in all of its operations, from raw material control to the intermediates and final products control.

All of Sunresin resins are manufactured under ISO standards and analyzed using world class analytical instruments.

Each batch of raw materials and finished products is validated according to Sunresin's Quality Assurance system.



TECHNICAL SUPPORT

Sunresin's well-earned reputation for customized solutions helps itself to have built a high quality professional team for marketing and service.

The company's tech support provides different services including on-site technical consultancy, training, special request and urgent calls 24*365 a year.

PRODUCTION CONTROL

Sunresin's production lines involve a high grade of automation, resulting in products with very high consistency and excellent quality. The production lines are designed and made with own independent Intellectual property rights.

Sunresin integrated its years of product experience and technology into designing unique operation system and optimizing production facilities, therefore the production line is perfectly fit for delivering best in class resins.

SEPLITE® Specialty Resin Categories

- Food Processing
- Health Care
- Chemical Processing
- Hydrometallurgy
- Waste Water & VOCs treatment



As the pioneer in this field in China, Sunresin was the first provider applying the resin adsorbent techniques in food processing. Up to now in the Chinese market, the adsorbent techniques applied in juice industries all originated from Sunresin initiation. After 20 years continuously technical innovation and industrialization in this field, new resins and solutions specialized for food processing have stood firmly in the market, which are separately specified for nutrition products, fruit juices such as apple, orange, pear, pineapple, lemon, grape and pomegranate, as well as in sugar & sweetener industries. More than 5000M³ of these products have been supplied to beverage industries of both domestic and overseas with several tens of production lines scoping from 5t/hr to 100t/hr. The resins are produced fully in accordance with the FDA (US Food & Drug Administration), also meeting the regulations prescribed under Resolution ResAP (2004) 3 on ion exchange and adsorbent resins used in the processing of foodstuffs.



Sunresin applies resin purification technology to the refining process of sucrose. With simple and efficient operation, it can produce high-grade sucrose with less investment. Corn Sweetener is an important sweetener in addition to sucrose, it included glucose, xylose, maltose, and fructose syrup.

SEPLITE® Adsorbent Resins for Sugar Processing and Sweeteners

SEPLITE®	Type	Moisture (%)	Bulk Density (g/ml)	Particle size (mm)	Application
LSF 975	Styrene / DVB macroporous	50-60	0.65-0.75	0.4-1.25	Sugar decolorization
LSF 976	Styrene / DVB macroporous	55-65	0.62-0.72	0.4-1.25	Sugar decolorization, anionic resin
LSF 980	Styrene / DVB macroporous	50-60	0.65-0.73	0.4-1.25	Adsorption of organic substances

SEPLITE® Ion Exchange Resins for Sugar Processing and Sweeteners

SEPLITE®	Type	Shipping form	Moisture (%)	Bulk Density (g/ml)	Total Capacity (eq/l)	Particle size (mm)	Application
LSF 970	Styrene / DVB Gel, SAC	Na ⁺	45-50	0.77-0.87	≥1.9	0.4-1.25	Demineralization and decolorization for in sugar industries such as xylose, glucose and maltose etc. Removal of ash, metal ions, pigment, acid matters, pesticides and HMF.
LSF 971	Styrene / DVB Macroporous, SAC	Na ⁺	45-55	0.75-0.85	≥1.8	0.4-1.25	
LSF 972	Styrene / DVB Macroporous, SBA	Cl ⁻	47-57	0.68-0.73	≥1.2	0.4-1.25	
LSF977	Styrene / DVB Macroporous, SBA	Cl ⁻	60-70	0.60-0.70	≥0.85	0.4-1.25	
LSF 973	Styrene / DVB Macroporous, WBA	Free base	48-58	0.65-0.72	≥1.5	0.4-1.25	
LSF 978	Styrene / DVB Gel, SAC	Na ⁺	43-48	0.78-0.87	≥2.0	0.4-1.25	Softening and decationization in different sugar products like starch sugar, cane sugar, beets and gelatin etc.
LSF 979	Styrene / DVB Gel, SAC	Na ⁺	39-45	0.78-0.88	≥2.2	0.4-1.25	
LSF 958	Polyacrylic Macroporous, SBA	Cl ⁻	65-75	0.65-0.75	≥0.85	0.4-1.25	Demineralization and decolorization in cane sugar industry.
LSF 983S	Polyacrylic Macroporous, WAC	H ⁺	50-60	0.72-0.80	≥4.3	0.4-1.60	
LSF 984	Styrene / DVB Gel,SBA, type I	Cl ⁻	53-63	0.66-0.73	≥1.2	0.4-1.25	
LSF 986	Styrene / DVB Gel,SBA, type I	Cl ⁻	42-48	0.66-0.75	≥1.4	0.4-1.25	
LSF 987	Styrene / DVB Gel,SBA, , type II	Cl ⁻	47-57	0.68-0.74	≥1.2	0.4-1.25	
LSF 930B	Styrene / DVB Macroporous, WBA	FB/Cl ⁻	40-50	0.65-0.73	≥1.8	0.4-1.25	
LSF 930C	Styrene / DVB Macroporous, WBA	FB/Cl ⁻	40-50	0.65-0.73	≥2.0	0.4-1.25	



SEPLITE® Monojet® Resins for Sugar Processing and Sweeteners

SEPLITE®	Type	Shipping Form	Moisture (%)	Bulk Density (g/ml)	Total Capacity (eq/l)	Particle size (mm)	Uniformity Coefficient	Application
LSF 9710	Styrene / DVB	Na ⁺	45-55	0.77-0.85	≥1.8	0.63±0.05	≤1.1	Demineralization and decolorization in sugar industries. such as xylose, glucose and maltose etc. Removal of ash, metal ions, pigment, acid matters, pesticides and HMF.
	Macroporous, SAC	H ⁺	50-60	0.74-0.80	≥1.6	0.65±0.05	≤1.1	
LSF 9720	Styrene / DVB	Cl ⁻	58-68	0.65-0.73	≥1.0	0.63±0.05	≤1.1	
	Macroporous, SBA	OH ⁻	60-70	0.64-0.70	≥0.9	0.65±0.05	≤1.1	
LSF 9730	Styrene / DVB Macroporous, WBA	Free base/ Cl ⁻	50-60	0.65-0.75	≥1.5	0.55±0.05	≤1.1	
LSF 9732	Styrene / DVB Macroporous, WBA	Free base/ Cl ⁻	50-60	0.65-0.75	≥1.7	0.55±0.05	≤1.1	Acid removal and decolorization of sugar
LSF 9300	Styrene / DVB Macroporous, WBA	Free base	45-55	0.65-0.73	≥1.8	0.60±0.05	≤1.1	
LSF9780	Styrene / DVB Gel, SAC	Na ⁺	42-48	0.75-0.85	≥2.0	0.60±0.05	≤1.1	Decationization in different sugar products like starch sugar, cane sugar, beets and gelatin etc.
		H ⁺	50-55	0.72-0.82	≥1.8	0.60±0.05	≤1.1	
LSF9790	Styrene / DVB Gel, SAC	Na ⁺	39-45	0.78-0.88	≥2.2	0.65±0.05	≤1.1	
		H ⁺	45-52	0.74-0.84	≥2.0	0.65±0.05	≤1.1	
LSF 9840	Styrene / DVB Gel, SBA, Type I	Cl ⁻	49-55	0.66-0.75	≥1.2	0.65±0.05	≤1.1	Demineralization and decolorization of solution in food applications.
LSF 9860	Styrene / DVB Gel, SBA, Type I	Cl ⁻	42-49	0.68-0.75	≥1.4	0.55±0.05	≤1.1	
		OH ⁻	55-65	0.66-0.70	≥1.0	0.59±0.05	≤1.1	
LSF 9870	Macroporous, SBA, Type II	Cl ⁻	47-57	0.65-0.75	≥1.1	0.60±0.05	≤1.1	

SEPLITE® Chromatographic grade for Separation and Purification

Seplite Chromatographic grade resins, suitable in applications like Beet sugar, Dextrose, HFCS, high purity fructose, polyols, sugar alcohols and high value sweeteners. Widely used in amino acid extraction, organic acid demineralization and purification, antibiotics and chemical intermediates and other fermentation or chemical commodities. Such as lysine extraction, extract lysine and remove other components from the fermentation broth by cation resin.

Product	Type	Shipping form	Moisture (%)	ShippingWeight (g/L)	Total Capacity (eq/l)	Particle size (μ m)	Uniformity coefficient	Application
CM1850	Gel, ST-DVB	K+	45-50	0.82	≥ 1.5	280±15 300±15	1.1	Widely used in separation and purification of amino acid fermentation liquid, sugar and alcohol, as well as the desalination of nucleic acid, etc.
		Na+	50-55	0.83				
		Ca+	46-52	0.84				
CM1870	Gel, ST-DVB	K+	43-47	0.855	≥ 2.0	280±15 300±15	1.1	
		Na+	46-51	0.85				
		Ca+	42-46	0.86				
CM2850	Macroporous, ST-DVB	Na+	60-70(H+)	0.72-0.82	≥ 1.0	300-400	1.1	
CM1670	Gel, Acrylic	Cl-	56-64	0.72-0.82	≥ 1.6	400-500	1.1	



Sunresin has long been committed to the research and development of diversified resin materials for high-end medical care. The products cover a wide range of active pharmaceutical ingredients, herbal extraction of traditional Chinese medicine ingredients, solid-phase synthesis of polypeptides and the recent rapid development of biological products such as proteins and vaccine chromatography media products. The series of products in this field have more than 50% market share at home and abroad.

Equipped with advanced testing instruments together with experienced testing techniques for remaining substances, Sunresin is able to provide different resins for food grade, medicine grade and industrial grade.



SEPLITE® Resins for Pharmaceuticals

Sunresin has developed a series of CephalosporinsC (CPC) purification resins, including pretreatment, separation and decolorization years ago. Up to now Sunresin is the main CPC resin supplier worldwide.

SEPLITE® resins for pharmaceuticals are effective in decolorization, purification of fermentation liquor in antibiotics, vitamins, proteins and other medical applying chemicals.

SEPLITE® Adsorbent Resins for Fruit Juice processing

eg. Apple, Pear, Grape, Pineapple, Citrus, Lemon and Bee honey

SEPLITE®	Type	Moisture (%)	Bulk Density (g/ml)	Particle size (mm)	Application
LSF 903	Styrene / DVB macroporous	56-64	0.64-0.74	0.315-1.25	Colour removal, improve transmittance, and achieve better color stability.
LSF 904	Styrene / DVB macroporous	50-60	0.65-0.75	0.4-1.25	High efficient in patulin and pesticides removal.
LSF 905	Styrene / DVB macroporous	50-60	0.65-0.75	0.4-1.25	Colour removal, improve transmittance
LSF 910	Styrene / DVB macroporous	50-60	0.62-0.72	0.315-1.25	Adjust colour rate specially for pomegranate
LSF 950	Styrene / DVB macroporous	50-60	0.65-0.75	0.315-1.25	Removal of excessive heavy metal ions in fruit and vegetable juice.
LSF 960	Styrene / DVB macroporous	45-55	0.75-0.85	0.315-1.25	Remove patulin and pesticide with special color treatment.
LSF 967	Styrene / DVB macroporous	35-45	0.65-0.75	0.315-1.25	Colour removal for lemon juice
LSF 602	Styrene / DVB macroporous	55-65	0.65-0.75	0.315-1.25	Adjust Brix/Acid ratio for citrus
LSF 620	Styrene / DVB macroporous	55-65	0.62-0.72	0.315-1.25	Bitterness removal from citrus(limonin) with pulp tolerance max.5%.
LSF 650	Styrene / DVB macroporous	55-65	0.65-0.75	0.315-1.25	Pesticide removal such as carbendazim from citrus
LSF 941	Styrene / DVB macroporous	48-58	0.64-0.74	0.4-1.25	Antibiotics, pesticides and HMF removal in honey
LSF 951	Styrene / DVB macroporous	55-65	0.65-0.75	0.315-1.25	Removal of high fatty acid ester in distilled spirits

SEPLITE® Resins for Fruit Juice processing

SEPLITE®	Type	Shipping form	Moisture (%)	Bulk Density (g/ml)	Total Capacity (eq/l)	Particle size (mm)	Application
LX 100	Styrene / DVB macroporous	Na+	45-55	0.75-0.85	≥ 1.8	0.315-1.25	Deionization of juice, including apple, pear, grape and pineapple.
LX 200	Styrene / DVB macroporous	Free base	48-58	0.65-0.72	≥ 1.5	0.315-1.25	
LX 400	Styrene / DVB macroporous	Cl ⁻	60-70	0.65-0.75	≥ 1.2	0.315-1.25	



Product	Application	Equivalent Brand
LXA1180	CPC pretreatment resin, removal of proteins and some unknown pigments.	Amberlite XAD1180N
LXA18 LXA26	CPC separation resin, removal of relevant contaminants (mainly DCPC and DOCPC) , enhance the purity of CPC.	Amberlite XAD1600N
LXA670	Decolorization resin, removal of color components to yield a higher transmission.	Amberlite IRA67
LXA 850 LXA 851	Refining of CPC, Polypeptide and proteins. Natural extracts refining, e.g. polyphenols. Preparation of fermentation. Chromatographic separation.	SEPABEADS™ SP-850
LXA970 LXA870 LXA890	Decolorization of aminoglycoside antibiotic such as neomycin, gentamycin, kanamycin, etc. Deproteinization and decolorization of macrolide antibiotic , including erythrocin alkali, etc.	
LXA816 LXA822	Refining of semisynthetic medicine of Clindamycin Phosphate, clindamycin B component, iohexol.	
LXA840 LXA1180 LXA1600	Herbal Extraction, decolorization and refining of vitamin B12, both anaerobic and aerobic types.	
LXA18S LXA818	Purification of amino acid.	
LXA842	Refining natural vitamin E, purification of tocopherol.	
LXC 621	Based on Octadecyl Methacrylate - DVB matrix, specially designed for lipase immobilization	



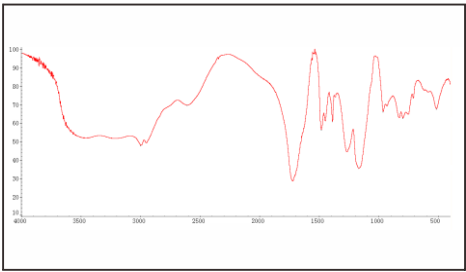
Other applications

- Extraction, decolorization and demineralization of protein and amino acid.
- Blood purification.
- Provide separation solution and customized services.

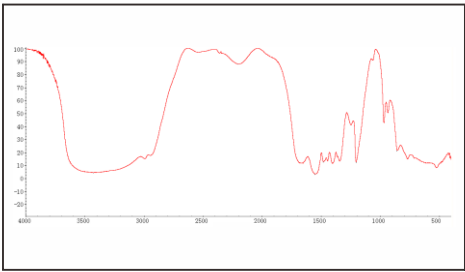
Powder Resins in Pharmaceutical grade

Sunresin is able to provide a category of pharmaceutical grade cation exchange resin in dry and fine powder. They are used in pharmaceutical applications as active ingredient or as carrier for certain basic drugs. With the set-up of advanced facility and technology, good properties and production sustainability are highly guaranteed.

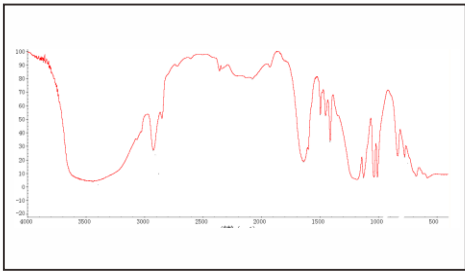
Product	Application	Equivalent Brand
LPF 851	Hydrogen-type, weakly acidic, as a carrier for certain basic drugs and related substances as a sustained release drug. Also used to mask objectionable tastes associated with certain basic drugs.	Amberlite IRP64
LPF 852	Potassium type, weakly acidic, as a disintegrant for tablet drugs.	Amberlite IRP88
LPF 854	Sodium-type, strongly acidic, as a carrier for certain basic (cationic) drugs and related substances.	Amberlite IRP69
LPF 855	Sodium-type, strongly acidic, as a carrier for certain basic (cationic) drugs and related substances.	
LPF 860	Gel type, Chloestyramine resin	



LPF 851 IR Spectrum



LPF 852 IR Spectrum



LPF 854 IR Spectrum



Fine Mesh Resins as Chromatography Media

In order to help to improve the effect of column separations, Sunresin developed fine mesh series product. The resins have excellent kinetic and packing properties, making it is ideal for chromatographic separations. Besides, the strong structure ensure the resins to provide high resistance to oxidation, reduction, mechanical wear and breakage.

Moreover, the resins are produced fully in accordance with the FDA (US Food & Drug Administration) , also meeting the regulations prescribed underResolution ResAP (2004) 3 on ion exchange and adsorbent resins used in the processing of foodstuffs.

Product	Type	Shipping form	Mesh size (mesh)	Moisture (%)	Total Capacity (eq/l)
FN5504H	ST	H ⁺	50-100	60-70	1.1
			100-200	60-70	
			200-400	60-70	
FN5508H	ST	H ⁺	50-100	50-58	1.7
			100-200	50-58	
			200-400	50-58	
FN5104CL	Gel, ST-DVB	Cl ⁻	50-100	55-65	1.0
			100-200	55-65	
			200-400	55-65	
FN5108CL	Gel, ST-DVB	Cl ⁻	50-100	43-48	1.2
			100-200	43-48	
			200-400	43-48	

SEPLITE® resins for plant are effectively applied for Herbal extraction and separation of active ingredients from plant liquors, such as flavones, polyphenols, proanthocyanidins (OPCs), stevia, alkaloids, etc., as well as for the removal of water-soluble and alcohol-soluble pigments.

Type	Application	Product	
Nonpolar	For saponins extracts. Eg. Gynostemma Gypenosides, Panax Notoginseng Saponins (PNS), PanaxquinquefoliumI Saponin, hesperidin, etc.	MC260 LXA11	LXA866
Neutral polar	For flavonoids extracts. Eg. ginkgo flavonoids, soy isoflavones, etc.	LXA10 AB8	LXA28 LXA838
Polar	For polar materials, such as anthraquinones, polyphenols, alkaloids, organic acids, etc.	LXA7 LXA880	LXA8 LXA17
High surface activity	For water soluble pigments, such as carotenoids red pigment, beet red, carthamin yellow, etc.	LXA70 LXA680 LXA822	LXA10G LXA10



Specific Resins for Herbal Extracts

Product	Application
LXA21	Herbal Extraction of chlorogenic acid from Eucommia and honeysuckle.
LXA860	Herbal Extraction of anthocyanin from Cranberry and blackcurrants.
LXA10	Herbal Extraction of proanthocyanidins from grape seeds.
LXA8 LXA680	LXA801 LXA866 Herbal Extraction, separation and purification of stevia.
LXA838	DM130 Herbal Extraction of Ginkgo flavonoids, soy isoflavones.
LXA8	LXA17 Herbal Extraction of tea polyphenols, effectively remove caffeine and improve EGCG and ECG content.
LSD001	Herbal Extraction of alkaloids, amino acid and peptides.
LSD632	LXA870 Decoloration of saponins, stevia, etc. extracts.
LXA820B	LXA2000 Chromatography purification of effective component and antibiotic from plant extracts.
LBR807	Separation of amino acids, protein removal, purification of natural products such as chlorogenic acid.
LXA803	Purification of tea alkaloids.

CHELATING RESINS FOR BRINE PURIFICATION

Brine for the electrolysis of alkali metal chlorides using the membrane process requires certain purity standards. Alkali earth metals like Ca²⁺ , Mg²⁺ , Sr²⁺ have to be removed to a very low concentration which cannot be achieved by conventional precipitation. Both, SEPLITE® Aminomethyl phosphoric acid resins, and Iminodiacetate resins, are able to effectively remove the alkali earth metals down to the lower ppb range and make the brine suitable for the membrane electrolysis.



Product	Functional Group	Total Capcity (eq/L)	Particle size (mm)	Uniformity Coefficient	Application	Equivalent
LSC 750	Amino phosphoric acid	≥2.4 (H form)	0.4-1.0	≤1.6	Preparation of secondary brine in ion exchange membrane caustic soda, hydrometallurgy	Lewatit TP260 Amberlite IRC747
Monojet® LSC 7500	Amino phosphoric acid	≥2.4 (H form)	0.60 ± 0.05	≤1.15	Preparation of secondary brine in ion exchange membrane caustic soda, hydrometallurgy	Lewatit Monoplus TP260
Monojet® LSC7500 MDS	Amino phosphoric acid	≥3.0 (H form)	0.40 ± 0.05	≤1.15	Preparation of secondary brine in ion exchange membrane caustic soda, hydrometallurgy	Lewatit MDS TP260
LSC 710	Iminodiacetic acid	≥2.2 (H form)	0.4-1.0	≤1.6	Selective adsorption of alkaline earth cations in chlor alkali industry.	Lewatit TP208 Amberlite IRC748
Monojet® LSC 7100	Iminodiacetic acid	≥2.0 (H form)	0.60 ± 0.05	≤1.15	Selective adsorption of alkaline earth cations in chlor alkali industry.	Lewatit Monoplus TP207
Monojet® LSC7105	Iminodiacetic acid	≥2.5 (H form)	0.50 ± 0.05	≤1.15	Selective adsorption of alkaline earth cations in chlor alkali industry.	Lewatit Monoplus TP208
Monojet® LSC7108	Iminodiacetic acid	≥2.4 (H form)	0.60 ± 0.05	≤1.15	Selective adsorption of alkaline earth cations in chlor alkali industry.	Lewatit Monoplus TP208
Monojet® LSC7100 MDS	Iminodiacetic acid	≥2.8 (H form)	0.40 ± 0.05	≤1.15	Selective adsorption of alkaline earth cations in chlor alkali industry.	Lewatit MDS TP208

Characteristics of SEPLITE® AMPA and IDA resins

Strong resistance to osmotic shock

High strength of resistance to wear and penetrate, low wastage rate, ≤5% annual supplement, stable kinetics performance.

High volumetric chelating capacity

Both resins show a high operating capacity for the removal of ions like Ca²⁺ , Mg²⁺ , Sr²⁺ , resulting in long cycle times.

CATALYST RESIN

With the continuous environmental awareness and demand, it has become an irresistible trend for the solid acid catalyst of chemical reaction to replace the liquid acid catalyst. Compared with the liquid acid catalyst, the solid acid catalyst has incomparable advantages: easy separation of products, less reaction by-products, no corrosion to equipment, no pollution to environment, and continuous production. Since the early 1990s, after the first introduction of the methyl tert-butyl ether (MTBE) device, solid acid catalyst was used in the organic reaction, which gradually entered the industrial scale and was applied in more and more fields. Sunresin is committed to the continuous development of catalytic resins and system integration technology, its products are mainly used in isobutylene etherification, isoamylene etherification, isobutylene hydration, propylene, butene hydrate, acrylic ester, maleic anhydride esterification, sec-butyl acetate synthesis, etc.

Etherification (MTBE, ETBE, TAME)

Product name	Type	Matrix	Ionic form	Min. Capacity (eq/kg)	(eq/L)	Moisture Content (%)	Shipping Weight (g/L)	(lb/ft3)	Op. Temperature (°C)	(°F)	Description
CT 115W	Strong acid	ST/DVB Macroporous	H ⁺	4.7	1.7	52-57	770	48	120	250	Etherification catalyst. Extremely resistant to breakdown by osmotic and mechanical shock.
CT101T	Strong acid	ST/DVB Macroporous	H ⁺	4.7	1.7	52-57	770	48	120	250	Etherification catalyst. Extremely resistant to breakdown by osmotic and mechanical shock.
CT 135W	Strong acid	ST/DVB Macroporous	H ⁺	5.20	1.90	51-57	800	50	150	300	Excellent etherification catalyst. Higher acid strength, better performance, and longer lifetime than conventional catalysts.
CT 101	Strong acid	ST/DVB Macroporous	H ⁺	5.20	1.90	51-57	800	50	150	300	Excellent etherification catalyst. Higher acid strength, better performance, and longer lifetime than conventional catalysts.
CT 103	Strong acid	ST/DVB Macroporous	H ⁺	5.20	1.90	51-57	800	50	150	300	Etherification of tertiary olefins with methanol in light gasoline to produce TAME and so on.
CT 505	Strong acid	ST/DVB Macroporous	H ⁺	≥0.8		26-36	600		120	250	Esterification, Transesterification

Dimerization (Isooctane)

Product name	Type	Matrix	Ionic form	Min. Capacity (eq/kg)	(eq/L)	Moisture Content (%)	Shipping Weight (g/L)	(lb/ft3)	Op. Temperature (°C)	(°F)	Description
CT 135W	Strong acid	ST/DVB Macroporous	H ⁺	5.2	1.9	51-57	800	50	150	300	Dimerization catalyst with high activity and high temperature stability.
CT 136W	Strong acid	ST/DVB Macroporous	H ⁺	5.4	1.9	53-59	800	50	150	300	Dimerization catalyst that combines high activity, high temperature stability, and good resistance to polymer fouling.

Phenol Purification

Product name	Type	Matrix	Ionic form	Min. Capacity (eq/kg)	(eq/L)	Moisture Content (%)	Shipping Weight (g/L)	(lb/ft3)	Op. Temperature (°C)	(°F)	Description
CT 116W	Strong acid	ST/DVB Macroporous	H ⁺	4.8	1.7	52-58	780	48.7	130	265	Condensation catalyst. Its low crosslinking degree provides a high resistance to polymer fouling.
CT 136W	Strong acid	ST/DVB Macroporous	H ⁺	5.4	1.9	53-59	800	50	150	300	Higher exchange capacity and improved thermal stability compared to conventional catalysts.

Phenol Alkylation

Product name	Type	Matrix	Ionic form	Min. Capacity (eq/kg) (eq/L)	Moisture Content (%)	Shipping Weight (g/L) (lb/ft3)		Op. Temperature (°C) (°F)		Description
CT115 dry	Strong acid	ST/DVB Macroporous	H+	4.7	≤1.6	610	38	120	250	Alkylation catalyst. Excellent for use in non-aqueous systems where the presence of water has a negative effect on catalyst activity.
CT135 dry	Strong acid	ST/DVB Macroporous	H+	5.0	≤3.0	560	35	150	300	Alkylation catalyst with higher acidity and improved thermal stability compared to conventional catalysts.
CT136 dry	Strong acid	ST/DVB Macroporous	H+	5.4	≤1.65	770	48	150	300	Premium alkylation catalyst. In addition to its high thermal stability, its low crosslinking degree confers a high resistance to organic fouling.
CT 105	Strong acid	Styrene / DVB macroporous	H+	≥1.10	50-56	750-870				High temperature catalyst. Used in olefin hydration, alkylation, etherification, esterification, esterification, dehydration, amination, acetone dimer, olefin dimer, etc.

Base Catalysed Reactions

Product name	Type	Matrix	Ionic form	Min. Capacity (eq/kg) (eq/L)		Moisture Content (%)	Shipping Weight (g/L) (lb/ft3)		Op. Temperature (°C) (°F)		Description
CT-21A	Weak base	ST/DVB Macroporous	FB	4.6	1.3	54-60	660	41.2	100	210	Catalyst for silane disproportionation and acid removal from aqueous and non-aqueous streams.
CT1121	Weak base	ST/DVB Macroporous	FB	4.6	1.3	54-60	660	41.2	100	210	Catalyst for silane disproportionation and acid removal from aqueous and non-aqueous streams. Removing phenol from benzene and in base-catalyzed reactions.
CT-26A	Strong base Type 1	ST/DVB Macroporous	OH ⁻	4.2	0.8	66-75	675	42.1	60	140	Excellent choice for aldol condensation. High resistance to organic fouling.



H₂O₂ RESIN

With the increasingly wide application range of hydrogen peroxide in the market, the demand for food grade hydrogen peroxide and electronic grade hydrogen peroxide is also increasing. SEPLITE® LSA-5 series of high antioxidant resins have been comprehensively promoted in the hydrogen peroxide refining industry, which can prepare food grade and electronic grade hydrogen peroxide, the application is highly recognized by different customers.

BIODIESEL RESIN

Seplite® BD130 is specially developed dry cation for Purification and impurity removal of Biodiesel. It has been developed to purify the raw biodiesel stream after the phase separation step in the manufacturing of biodiesel.



Lithium Recovery Resin

SEPLITE® resin for Lithium extraction maintains the basic body performance during Lithium adsorption. Compared with similar products, the adsorption capacity is higher and the strength is better. In addition, Sunresin's continuous ion exchange technology can guarantee the stability of the concentration of Lithium ions and the ratio of Magnesium Lithium in the desorption solution, and further improve the product performance.

For more details about Direct Lithium Extraction technology and cases, please contact us directly to get the Lithium specific brochure.



Ni Recovery Resin

The traditional method of Ni recovery is by solvent extraction. Pretreatment by precipitating Fe3+ is needed before extraction. During the precipitation, around 10% Nickel would enter into the residues and are very hard to recover. On the other hand Saponification of the extractant will consume NaOH.

SEPLITE® LSC495 has high selectivity to Ni and is not affected by Fe in solution. Therefore no pretreatment is needed which decreases the loss of Ni. To regenerate LSC495, sulfuric acid was used, no-saponification process therefore decreases the alkali consumption. The most important is that selectivity of resins to Ni being over 98%, which significantly decreased Nickel production cost.

Cu Recovery Resin

SEPLITE® LSC495 is also designed for Cu adsorption and perfectly used in Cu recovery of mines, mining tailings, electroplating etc, as well as refinery of Cu solutions. It was highly selective to Cu and able to adsorb Cu from strong acidic solutions and not affected by other metal ions. Cu removal rate could be higher than 99%. The capacity exceeds 35g/L.





Ga Recovery Resins

Sunresin is an experienced solution provider for Ga recovery from Bayer liquor in the Alumina industry. As the key resin supplier, Sunresin provides the market with high performance resins selective for Gallium. Products for both processes, acid and alkali method, are available as well as packed with 4N Ga systematic equipment. Sunresin integrates resin manufacturing, applied technology, and patent equipment into Ga recovery line, therefore forming comprehensive capability to serve customers in EPC mode.

Sunresin is the strongest Ga recovery resin manufacturer and turn key solution provider in China.

Products	Type	Application
LGA 750	Chelating Resin	Gallium recovery in alkali method
LGA 755	Chelating Resin	Gallium recovery in acid method
LGA 760	Chelating Resin	Gallium recovery from Bayer liquor with high Vanadium content

Characteristics of SEPLITE® Ga Recovery Resins

- High temp. limit (45±2℃), which reduced the operation risks.
- Good mechanical strength, which dramatically reduces the loss of resin.
- Excellent anti-fouling performance.
- Cost-effective, main specifications are world leading.



Other Chelating Resins

Product	Type	Application	Equivalent Brand
LSC710 (Monojet is available)	Iminodiacetate	Selective removal of heavy metals from contaminated waste waters and ground water remediation; Trace metals removal	Lewatit TP207
LSC720	Thiuronium resin	Separation, enrichment of noble metal Au, Pt, Pd etc.	Purolite S920
LSC724	Thiuronium resin	High precision Mecury recovery	Lanxess TP214
LSC730	Phosphonic and sulfonic acid	Iron removal from acidic solutions	Purolite S957
LSC740	Thiol resin	Mercury removal	Purolite S924
LSC743	Thiol resin	Mercury removal with better precision	GT73/GT74
LSC750 (Monojet is available)	Aminophosphonic acid	Hevay metals removal from different solutions, eg. Sb, Bi, Ti, Al, etc.	Lewatit TP260
LSC660		Gold recovery from alkaline cyanide leach	
LSC770	Complex Amine	Rhenium recovery	Purolite A170
LSC772	Cyanex 272 impregnated resin	Cobalt removal from Nickel sulfate solutions	Lanxess TP272
LSC780	N-Methylglucamine	Boron removal	Amberlite IRA743 Purolite S108
LSC788		Selective recovery of Uranium	
LSC790	D2EHPA impregnated resin	Scandium & Zinc recovery	Lanxess VP OC 1026
CT 20		CO2 adsorption	Lanxess VP OC 1065
LAR714	Chelating	Highly arsenic removal	Purolite Arsenxnp

Other applications

- Removal of Iron and Calcium and extraction of Gallium from fly ash production of Alumina
- Extraction of Lithium carbonate in salt lake brine
- Remove Boron from magnesium chloride brine
- Extraction and separation of precious metals such as Gold, Silver, Platinum, Palladium, Rhodium, etc
- Extraction of Uranium
- Extraction of metal oxides such as Tungsten and Molybdenum
- Remove iron in Zinc/Nickel electrolyte circulation
- Recovery of Rhenium from waste acid in metallurgical industry
- Recovery of Platinum and Rhodium from nickel ammonium sulfate solution
- Separation and recovery of residual organic matter, such as tributyl phosphate and diethyl hexyl phosphate, by electrolyte or metal purification liquid-liquid extraction
- Recovery of metal catalysts in organic phases in the organic and synthetic fields
- Removal of chloride ions from manganese sulfate electrolyte
- Removal of Bismuth and Antimony from copper electrolyte

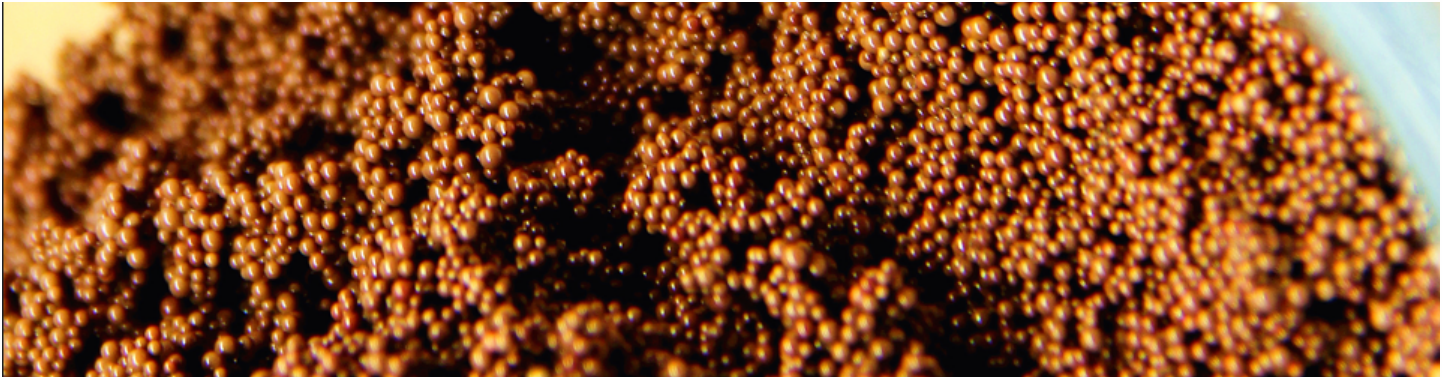
Sunresin has made great efforts for years on R&D for comprehensive management of water pollution control and resource utilization. SEPLITE® resins, covering XDA hyper-cross linked polystyrene macroporous adsorbent, LWT category, LSC chelating resin, LSA complexion adsorbent and VOCs adsorbent, integrated with fixed bed or continuous ion exchange technology have been successfully used in the treatment of organic waste water and heavy metal polluted water. Useful or valuable metals can be enriched, recovered and reused.

SEPLITE® environmental protection series together with equipment and technology have been broadly applied in various fields like petrochemical, coal chemical, dye, pesticide, medicine, electroplating, electronics, hydrometallurgy and other industries.



SEPLITE® Resins for Waste Water

Product	Application
XDA category hyper-cross linked ST adsorption resins LWT category resins	Treatment of Organic polluted water. eg. Recycling of phenols, amines, organic acids, nitro-, halogenated hydrocarbon etc. from waste water of industries as petrochemical, dyestuff, pesticide, medicine and their intermediates. In recycled water project recovering low-medium boiling solvent, removing organic, color and to lower RO discharge to standard.
LSC chelating resins LSA complexion resins	Recycling of metals like Mo, V, W in hydrometallurgy. Removing heavy metals such as Cu, Ni, Cr, Pb, Cd, Co, Mn, Hg, As from waste water of industries as electroplate, hydrometallurgy, circuit board etc.



SEPLITE® Resins for VOCs Treatment

Product	Application
VOCs adsorbent resins CT10 Series	Separation and recycling of low and medium VOCs, including alkanes (n-hexane, heptane, cyclohexane, etc.), halogenated hydrocarbons (trichloroethylene, trichloroethane, dichloromethane, trichloromethane, chlorobenzene, etc.), aromatic hydrocarbons (benzene, toluene, xylene, etc.) and low-carbon alcohols (isopropanol, butanol), ketones (acetone, butanone, methyl isobutanone, cyclohexanone, etc.), esters (ethyl acetate, butyl acetate, acetate, etc.). And other organic matters.



SEPLITE® Water Treatment Resins

- IWT/ General DI
- Power Plant
- Ultrapure Water
- Drinking Water
- Packaging Options



Ion exchange resins for Deionization are classified into cation exchange resins and anion exchange resins, as well as mixed bed ion exchange resins.

The cation exchange resin can exchange thanks to their functional group cations out of the solution, and the anion exchange resin can exchange anions. The mixed bed is a physical mixture of both cation resin and an anion resin and as such can remove anions and cations in the water.

Ion exchange resin can in most application be regenerated to restore their ion exchange ability. This regeneration is accomplished through the application of a concentrated acidic or basic regeneration solution which displaces the ions which were exchanged. Through regeneration, ion exchange resin can deliver consistent results over a long service life.

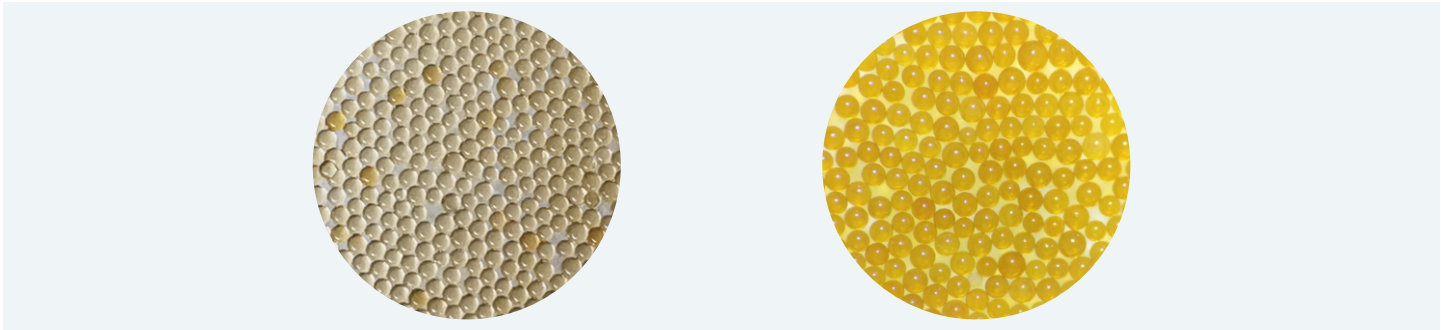
Ion exchange resins are widely used in different separation, purification, and decontamination processes. The most common examples are water softening, dealkalisation, demineralisation, as well as the removal of organics from water for many industrial uses (boilers, air conditioning, dilution, rinse etc.)

Industrial equipment using ion exchange resins are designed according to different principles and Sunresin can deliver the required resin types for all these technologies. Co-current and counter-current designs do place different requirements on the particle size of the beads. For counter-current application using nozzles to retain the ion exchange resins in the filter a special, coarser, particle size distribution has been developed by Sunresin. With a bead size distribution starting at 0,4 mm instead of 0,315 mm it provides the characteristics required to protect the nozzles in use in the filter. This special Particle Size Distribution is available for most of our products as DA grade.

CATION EXCHANGE RESINS

Strong Acid Cation

Product	Type	Shipping form	Moisture (%)	Shipping Weight (kg/L)	Total Capacity (eq/l)	Particle size (mm)	Application
SEPLITE® SC 110	Gel, ST	Na ⁺	56-63	0.78	≥1.5	0.315-1.25	Gel type, widely used in water treatment, like Water softening, deionization etc, in water and other solutions, very good resistance to osmotic and thermal shock.
SEPLITE® SC 120	Gel, ST	Na ⁺	45-50	0.80	≥1.9	0.315-1.25	
SEPLITE® SC 130	Gel, ST	Na ⁺	43-48	0.82	≥2.0	0.315-1.25	
SEPLITE® SC 140	Gel, ST	Na ⁺	38-44	0.85	≥2.3	0.315-1.25	
SEPLITE® SC 130NS	Gel, ST	Na ⁺	43-48	0.82	≥2.0	0.315-1.25	Non-solvent SAC
SEPLITE® SC 130LD	Gel, ST	Na ⁺	43-48	0.82	≥2.0	0.315-1.25	SAC with very Low DCE (<50ppb)
SEPLITE® SC 120H	Gel, ST	H ⁺	50-60	0.78	≥1.7	0.315-1.25	Gel type SAC, H ⁺ form.
SEPLITE® SC 130H	Gel, ST	H ⁺	50-56	0.80	≥1.8	0.315-1.25	
SEPLITE® MC 240	Macro, ST	Na ⁺	45-55	0.84	≥1.8	0.315-1.25	Macroporous type SAC, widely used in water treatment, deionization etc, it has excellent performance on osmotic shock and regeneration efficiency.
SEPLITE® MC 240H	Macro, ST	H ⁺	50-60	0.83	≥1.7	0.315-1.25	
SEPLITE® MC 241	Macro, ST	Na ⁺	45-55	0.85	≥1.8	0.45-1.25	
SEPLITE® MC 243	Macro, ST	Na ⁺	45-55	0.85	≥1.8	0.63-1.25	
SEPLITE® MC 210	Macro, ST	Na ⁺	40-50	0.84	≥2.0	0.315-1.25	
SEPLITE® MC 220	Macro, ST	Na ⁺	40-50	0.84	≥2.2	0.315-1.25	



Weak Acid Cation

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	TotalCapacity (eq/l)	Particle size (mm)	Application
SEPLITE®MC270	Macro, Acrylic	H+	50-60	0.74	≥ 3.6	0.315-1.25	Deionization and softening in industrial water or organic solutions.
SEPLITE®MC290	Macro, Acrylic	H+	45-55	0.74	≥ 4.3	0.315-1.60	Widely used in softening, waste water treatment etc.
SEPLITE®MC298	Macro, Acrylic	H+	45-55	0.74	≥ 4.5	0.40-1.60	Higher total capacity.
SEPLITE®GC285	Gel, Acrylic	H+	45-55	0.74	≥ 4.3	0.315-1.25	Water demin and dealkalization.

ANION EXCHANGE RESINS

Strong Base Anion

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	TotalCapacity (eq/l)	Particle size (mm)	Application
SEPLITE®SA 400	Gel, ST	Cl ⁻	45-60	0.69	≥ 1.2	0.315-1.25	Type 1, SBA gel type ion exchange resins, excellent on operation capacity and long service time, good silica removal, used for condensate deionization and mixed bed.
SEPLITE®SA 470	Gel, ST	Cl ⁻	42-48	0.70	≥ 1.4	0.315-1.25	
SEPLITE®SA 420	Gel, ST	Cl ⁻	40-45	0.70	≥ 1.25	0.315-1.25	Gel type 2 SBA, good anti fouling and regeneration efficiency
SEPLITE®MA900	Macro, ST	Cl ⁻	50-60	0.69	≥ 1.2	0.315-1.25	Type 1, macroporous SBA, outstanding mechanical resistance to strong osmotic shock and high regeneration efficiency, used in demineralization
SEPLITE®MA900MB	Macro, ST	Cl ⁻	50-60	0.69	≥ 1.2	0.4-0.9	
SEPLITE®MA920	Macro, ST	Cl ⁻	47-57	0.69	≥ 1.2	0.315-1.25	Macroporous type 2, SBA, higher capacity
SEPLITE®MA958	Macro, Acrylic	Cl ⁻	65-75	0.65-0.75	≥ 0.85	0.315-1.25	Macroporous type1, remove of large organic molecules
SEPLITE®MA970	Macro, ST	Cl ⁻	65-75	0.60-0.70	≥ 0.8	0.315-1.25	Macroporous type 1, remove organic substances from water or waste water solutions, like tannins, humid acids etc.
SEPLITE®MA 870	Macro, ST	Cl ⁻	68-82	0.60-0.70	≥ 0.65	0.315-1.25	Macroporous type 1, remove anions,organic acid, color etc, from water, juice or sugars syrup.
SEPLITE®LX67	Gel, Acrylic	Cl ⁻	56-62	0.70-0.75	≥ 1.5	0.315-1.25	Demineralization in water with high concentration of organic substance.
SEPLITE®LX67 Plus	Gel, Acrylic	Cl ⁻	55-62	0.67-0.77	≥ 1.6	0.315-1.25	
SEPLITE®LX6701	Gel, Acrylic	Cl ⁻	55-65	0.70-0.75	≥ 1.2	0.40-1.25	
SEPLITE®Lx6702	Gel, Acrylic	Cl ⁻	56-62	0.65-0.75	≥ 1.25	0.40-1.25	



Weak Base Anion

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	TotalCapacity (eq/l)	Particle size (mm)	Application
SEPLITE®MA 940	Macro, ST	Free base	48-58	0.7	≥ 1.5	0.315-1.25	Macroporous type, demineralization, decolor etc, outstanding performance on regeneration efficiency
SEPLITE®MA943	Macro, ST	Free base	50-60	0.7	≥ 1.6	0.315-1.25	Macroporous type, better strength and performance in demineralization and decoloration.
SEPLITE®MA943 Plus	Macro, ST	Free base	40-50	0.7	≥ 2.0	0.40-1.25	Macroporous type, better strength and performance in demineralization and decoloration.
SEPLITE®MA939	Macro, Acrylic	Free base	45-55	0.7	≥ 2.8	0.40-1.25	Removal of organic acids and mineral substances.
SEPLITE®MA950	Macro, Acrylic	Free base	47-57	0.7	≥ 2.8	0.315-1.25	Removal of organic acids and mineral substances.

MIXED BED RESINS

Mixed bed are a demineralization system directly « out of the box ». To achieve this Mixed bed contain a mixture of regenerated cation and anion ion exchange resin all in one. Mixed beds are widely used to directly generate high quality demineralized water in remote application like laboratory or workshops. Furthermore they are used in the water purification industry for polishing water previously demineralized with an Ion Exchange or Reverse Osmosis system to achieve high purity demineralized water for industrial processes requiring it. In the ready to use Mixed beds from Sunresin the mixture of strong acid cation resins in H+ form and strong base anion resins in OH- form involves a precise ratio of both components designed to adjust the characteristics of the Mixed bed to the requirement of the application. Our base product MB18 involves a volume ratio of 1:1. For application requiring high capacity we provide Mixed beds with a volume ratio of Cationics to Anionics of 1:1,5 MB28 or 1:2 with MB38. Furthermore we can provide for price conscious customers Mixed beds from the MBx0 series with SA400 as anionics component offering an attractive entry level product. To facilitate operation we can provide also *IND grade Mixed beds with color indicator for the cationics or anionics resin allowing the user to detect exhaustion of the mixed bed. Our color indicators will have the following colours depending on their ionic form:

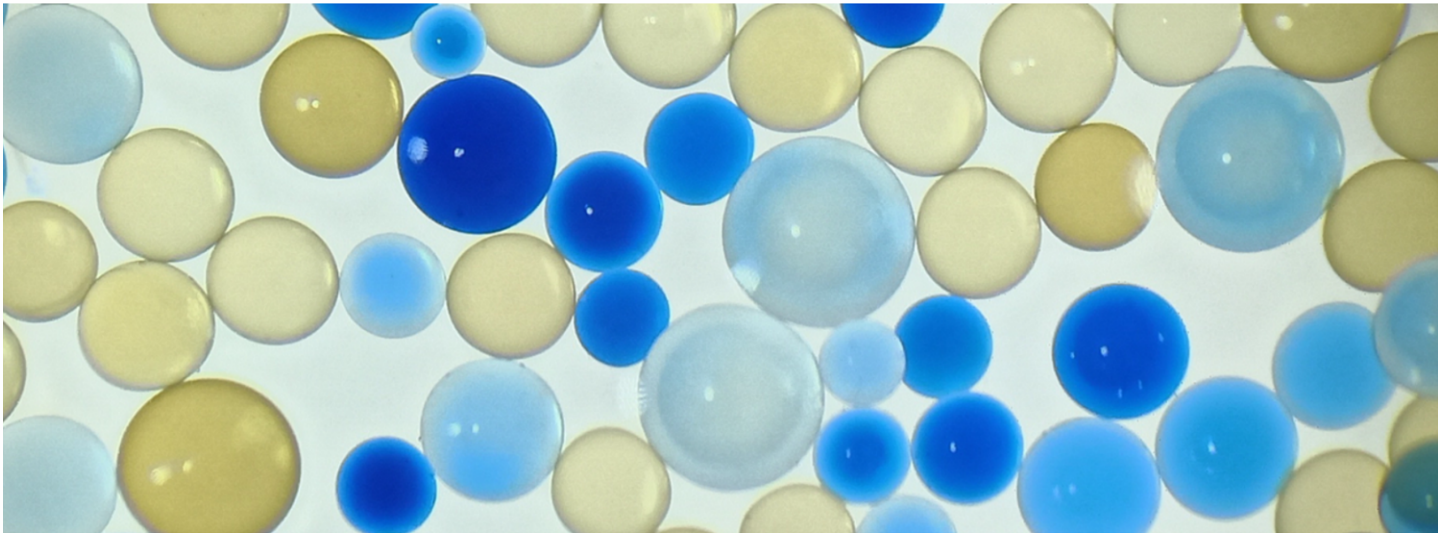
- Cationic resin: Regenerated (-H+) green changing to rose red when exhausted.
- Anionic resin: Regenerated (-OH-) blue changing to faint yellow when exhausted.



Product	Type	Shipping form	ShippingWeight (kg/L)	Total Capacity (eq/l)	Particlesize (mm)	Application
SEPLITE® MB18	Cation/Anion Volumeratio 1:1	99%H ⁺ , 95%OH ⁻	0.70-0.74	1.9/1.1	0.315-1.25	Higher capacity, used in EDM market and semi-conductor industry.
SEPLITE® MB28	Cation/Anion Volumeratio 1:1.5	99%H ⁺ , 95%OH ⁻	0.70-0.74	1.9/1.1	0.315-1.25	Ready to use mixed bed, polishing for IX and RO plant.
SEPLITE® MB38	Cation/Anion Volumeratio 1:2	99%H ⁺ , 95%OH ⁻	0.70-0.74	1.9/1.1	0.315-1.25	Ready to use mixed bed, polishing for IX and RO plant.

Product	Type	Shipping form	ShippingWeight (kg/L)	Total Capacity (eq/l)	Particlesize (mm)	Application
SEPLITE® MB10	Cation/Anion Volumeratio 1:1	99%H ⁺ , 90%OH ⁻	0.65-0.75	1.8/1.0	0.315-1.25	Used in EDM market and semi-conductor industry.
SEPLITE® MB20	Cation/Anion Volumeratio 1:1.5	99%H ⁺ , 90%OH ⁻	0.70-0.74	1.8/1.0	0.315-1.25	Ready to use mixed bed, polishing for IX and RO plant, with anionics SA400 as component.
SEPLITE® MB30	Cation/Anion Volumeratio 1:2	99%H ⁺ , 90%OH ⁻	0.68-0.73	1.8/1.0	0.315-1.25	Ready to use mixed bed, polishing for IX and RO plant, with anionics SA400 as component.

*IND: To naming the grade with indicators, eg. MB10 IND, MB20 IND, MB30 IND, MB18 IND etc.



MONOJET

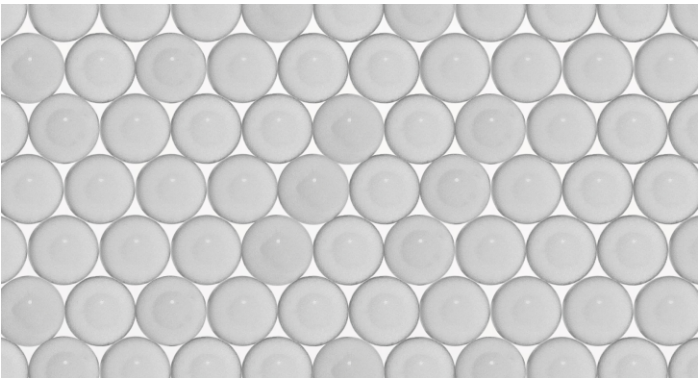
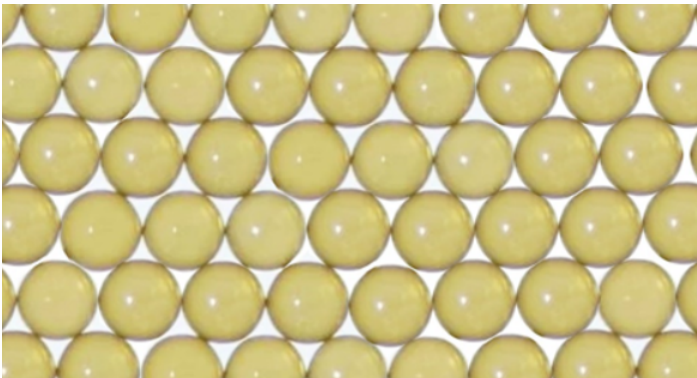
The Seplite®Monojet® product category are ion-exchange resins manufactured with a proprietary jetting technology offering a very good uniformity of partical size. Thanks to their uniform bead size the Seplite® Monojet® products have excellent hydraulic and dynamic performances, with a faster exchange rate, improving water quality and treatment capacity. At the same time, the operating velocity and pressure drop of the system can be improved by using the Seplite® Monojet® products.

Strong Acid Cation Monojet

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	Total Capacity (eq/l)	Particlesize (mm)	Uniformity Coefficient	Application
SEPLITE® Monojet® SC3050	Gel, ST-DVB	Na ⁺	56-63	0.73-0.84	≥ 1.45	0.75±0.05	≤ 1.1	Industrial water softening and demineralization applied in power plant.
		H ⁺	62-70	0.70-0.80	≥ 1.3	0.75±0.05	≤ 1.1	
SEPLITE® Monojet® SC3100	Gel, ST-DVB	Na ⁺	42-48	0.75-0.85	≥ 2.0	0.60±0.05	≤ 1.1	A uniform particle size, widely used in industrial demineralization.
		H ⁺	50-55	0.72-0.82	≥ 1.8	0.60±0.05	≤ 1.1	
SEPLITE® Monojet® SC3200	Gel, ST-DVB	Na ⁺	39-45	0.78-0.88	≥ 2.2	0.65±0.05	≤ 1.1	A uniform particle size, widely used in industrial demineralization.
		H ⁺	45-52	0.74-0.84	≥ 2.0	0.65±0.05	≤ 1.1	
SEPLITE® Monojet® SC3300	Gel, ST-DVB	H ⁺	35-43	0.80-0.84	≥ 2.35	0.60±0.05	≤ 1.1	A uniform particle size, widely used in condensate polishing in PWR nuclear or high pressure fossil electricgenerating plants.
SEPLITE® Monojet® SC3500	Gel, ST-DVB	H ⁺	35-43	0.80-0.84	≥ 2.50	0.525±0.05	≤ 1.1	Extremely high capacity and purity. It is intended for use in either single bed or separable mixed bed system.

Strong Base Anion Monojet

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	Total Capacity (eq/l)	Particlesize (mm)	Uniformity Coefficient	Application
SEPLITE® Monojet® SA6200	Gel, ST-DVB	Cl ⁻	40-50	0.67-0.77	≥ 1.3	0.62±0.05	≤ 1.1	Uniform particle size, Gel Type 2, Strong base anion resin for Industrial demineralization applications.
SEPLITE® Monojet® SA6400	Gel, ST-DVB	Cl ⁻	49-55	0.66-0.75	≥ 1.3	0.65±0.05	≤ 1.1	Designed specifically for use in industrial demineralization.
		OH ⁻	60-70	0.64-0.70	≥ 1.0	0.69±0.05	≤ 1.1	
SEPLITE® Monojet® SA6700	Gel, ST-DVB	Cl ⁻	42-49	0.68-0.75	≥ 1.4	0.55±0.05	≤ 1.1	Designed specifically for use in industrial demineralization as well as condensate polishing with high performance required.
		OH ⁻	55-65	0.66-0.72	≥ 1.1	0.59±0.05	≤ 1.1	



CONDENSATE POLISHING

The Seplite® Monojet® products are especially suited for condensate polishing, offering excellent surface area and better dynamic properties, to ensure a high operating exchange capacity and thus protecting from ionic leakage during operation.

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	TotalCapacity (eq/l)	Particle size (mm)	Uniformity Coefficient	Application
SEPLITE® Monojet® SC7700 CP	Gel, ST	Na ⁺	39-45	0.78-0.88	≥ 2.2	0.60-0.70	≤ 1.1	Suitable for high flow rate mixed bed, used in condensate polishing of power plant.
		H ⁺	46-51	0.74-0.84	≥ 2.0	0.60-0.70	≤ 1.1	
SEPLITE® Monojet® SA8500 CP	Gel, ST	Cl ⁻	42-49	0.68-0.75	≥ 1.4	0.50-0.60	≤ 1.1	Suitable for high flow rate mixed bed, used in condensate polishing of power plant.
		OH ⁻	55~65	0.66-0.70	≥ 1.0	0.55-0.65	≤ 1.1	
SEPLITE® Monojet® MC3600 CP	Macro, ST	Na ⁺	45-55	0.77-0.85	≥ 1.8	0.63±0.05	≤ 1.1	Suitable for high flow rate mixed bed, used in condensate polishing of power plant.
		H ⁺	56-60	0.74-0.80	≥ 1.6	0.65±0.05	≤ 1.1	
SEPLITE® Monojet® MA9000 CP	Macro, ST	Cl ⁻	50-60	0.65-0.73	≥ 1.1	0.63±0.05	≤ 1.1	Suitable for high flow rate mixed bed, used in condensate polishing of power plant.
		OH ⁻	60-70	0.64-0.70	≥ 0.9	0.65±0.05	≤ 1.1	



NUCLEAR GRADE

The Seplite® Monojet® Nuclear grade resins offer highest stability and purity, minimizing the release of ions or organic substances that could cause precipitation and corrosion during operation.
The nuclear grade category contains a minimum of 99% regeneration grade.

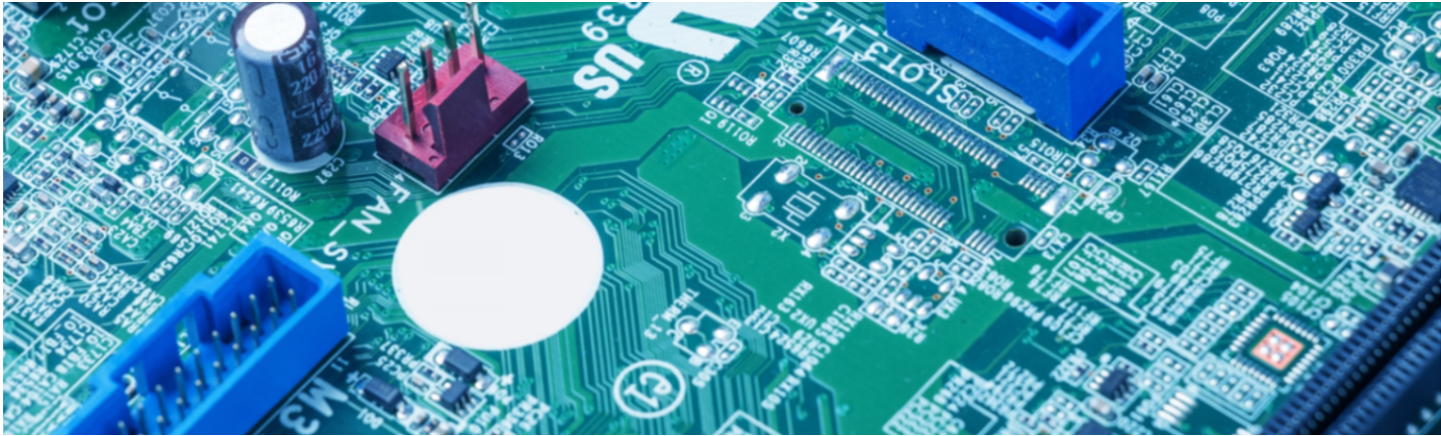
Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	TotalCapacity (eq/l)	Particle size (mm)	Uniformity Coefficient	Application
SEPLITE® SC130NK	Gel, ST-DVB	H ⁺	50-55	0.72-0.82	≥ 1.8	0.40-1.25	≤ 1.6	High-purity gel strong cation resin designed specifically for use in nuclear power industry to remove radioactive isotope.
SEPLITE® Monojet® SC7100N	Gel, ST	H ⁺	49-55	0.72-0.82	≥ 1.9	0.55-0.65	≤ 1.2	Uniform particle size with high purity as well as a low pressure drop, used in demineralization for water of Nuclear power plant.
SEPLITE® Monojet® SC7700N	Gel, ST	H ⁺	45-51	0.74-0.84	≥ 2.1	0.60-0.70	≤ 1.2	Uniform particle size with high purity as well as a low pressure drop, used in demineralization for water of Nuclear power plant.
SEPLITE® Monojet® SC7900N	Gel, ST	H ⁺	37-43	0.76-0.86	≥ 2.4	0.60-0.70	≤ 1.2	Uniform particle size with high purity as well as a low pressure drop, used in demineralization for water of Nuclear power plant.
SEPLITE® MC250NK	Macro, ST-DVB	H ⁺	43-48	0.74-0.80	≥ 2.1	0.40-1.25	≤ 1.6	High-purity strong cation resin designed specifically for use in nuclear power industry to remove radioactive isotope.
SEPLITE® Monojet® MC2500N	Macro, ST-DVB	H ⁺	43-48	0.74-0.80	≥ 2.1	0.58±0.05	≤ 1.2	
SEPLITE® Monojet® SA8800N	Gel, ST	OH ⁻	54-60	0.66-0.70	≥ 1.2	0.58-0.68	≤ 1.2	Uniform particle size with high purity as well as a low pressure drop, used in demineralization for water of Nuclear power plant.
SEPLITE® Monojet® SA8900N	Gel, ST	OH ⁻	40-45	0.68-0.75	≥ 1.3	0.50-0.60	≤ 1.2	Uniform particle size with high purity as well as a low pressure drop, used in demineralization for water of Nuclear power plant.
SEPLITE® Monojet® MB850NK	Gel, Mixed Bed	H ⁺	49-55	0.72-0.82	≥ 1.9	0.55-0.65	≤ 1.2	Uniform particle size, with high purity as well as a low pressure drop, used in highest purity water treatment in nuclear power plant.
		OH ⁻	54-60	0.66-0.70	≥ 1.2	0.58-0.68	≤ 1.2	
SEPLITE® Monojet® MB860NK	Gel, Mixed Bed	H ⁺	45-51	0.74-0.84	≥ 2.1	0.60-0.70	≤ 1.2	Uniform particle size, with high purity as well as a low pressure drop, used in highest purity water treatment in nuclear power plant.
		OH ⁻	54-60	0.66-0.70	≥ 1.2	0.58-0.68	≤ 1.2	
SEPLITE® Monojet® MB870NK	Gel, Mixed Bed	H ⁺	37-43	0.76-0.86	≥ 2.4	0.60-0.70	≤ 1.2	Uniform particle size, with high purity as well as a low pressure drop, used in highest purity water treatment in nuclear power plant.
		OH ⁻	54-60	0.66-0.70	≥ 1.2	0.58-0.68	≤ 1.2	
SEPLITE® Monojet® MB960NK	Gel, Mixed Bed	H ⁺	45-51	0.74-0.84	≥ 2.1	0.60-0.70	≤ 1.2	Uniform particle size, with high purity as well as a low pressure drop, used in highest purity water treatment in nuclear power plant.
		OH ⁻	54-60	0.66-0.70	≥ 1.2	0.58-0.68	≤ 1.2	



ULTRA PURE WATER

High quality UPW (Ultra Pure Water) grade gel type Seplite® Monojet® resins are suitable for preparation of ultra-pure water, especially for the polishing stage of ultra-pure Water. They can produce high purity silica - free demineralized water with resistivity higher than 18MΩ·cm.

Product	Type	Shipping form	Moisture (%)	ShippingWeight (kg/L)	Total Capacity (eq/l)	Particle size (mm)	Uniformity Coefficient	Application
SEPLITE® Monojet® SC7700U	Gel, ST	H ⁺	46~51	0.74-0.84	≥ 2.0	0.60-0.70	≤ 1.1	Uniform particle size strong acid cation resin for single or mixed bed , Demineralization for ultra pure water applications
SEPLITE® Monojet® SA8500U	Gel, ST	OH ⁻	55~65	0.66-0.70	≥ 1.0	0.50-0.60	≤ 1.1	
SEPLITE® Monojet® MB610U	Gel, MD	H ⁺ /OH ⁻	OH:54~66 H:44~54	0.69	OH: ≥ 1.0 H: ≥ 1.8	OH- (0.58-0.68) H+ (0.58-0.68)	OH: ≤ 1.2 H: ≤ 1.2	Suitable for Semi-Conductor Grade Final Polishing, one-way use mixed bed.
SEPLITE® Monojet® MB615U	Gel, MD	H ⁺ /OH ⁻	OH:54~60 H:44~51	0.69	OH: ≥ 1.1 H: ≥ 2.0	OH- (0.58-0.68) H+ (0.60-0.70)	OH: ≤ 1.2 H: ≤ 1.2	Suitable for polishing of high purity water for specialty electronics applications



Potable water that is safe for human and animal consumption is essential to life. However the groundwater or surface water sources are facing increasing contamination around the world: diverse pollutants like heavy metals, perchlorate, pfos or impurities resulting from human activity that may be harmful to our health are more and more frequently encountered. Many water providers are forced to implement additional treatment or purification prior to distribution. Ion exchange resins are particularly well suited for pump and treat applications especially for the removal of trace contaminants without altering the overall water chemistry of the water supply. Sunresin offers various ion exchange resins and adsorbents for selective removal of contaminants from drinking water sources. We are able to provide dimensioning for most ion exchange combination and provide accurate project design based on customer's feed water analysis. In case of very specific site requirements we also provide a customized resins service to best adapt the resin to the customer's site conditions.

CARTRIDGE/WATER SOFTENING

To help to improve the taste and purity of drinking water, Sunresin manufactures SEPLITE® LSF983 series and Non-solvent SC130NS, they are applicable for cartridge or water softening tasks. SEPLITE® LSF983 is a food grade, polyacrylic macroporous weak acidic cation resin. It is characterized by its acrylic matrix and low swelling with a higher selectivity for divalent cations(Pb, Cd, Cu, Co, Ni, etc). Due to the polyacrylic matrix, the resin has good resistance to attrition, besides it is very stable toward commonly used chemicals. SC130NS is a high purity strong acid cation resin. It is made without solvent which gives it a distinctive surface, it will highly improve the safety grade of drinking water, ensures that no harmful solvent leakage.

Product	Type	Shippingform	Moisture(%)	Shipping Weight(kg/L)	Total Capacity(eq/l)	Particle size (mm)
SEPLITE® LSF983 FF	Macro, Acrylic	H ⁺	55-65	0.70-0.80	≥ 3.7	0.315-1.60
SEPLITE® LSF983	Macro, Acrylic	H ⁺	50-60	0.72-0.80	≥ 4.3	0.315-1.60
SEPLITE® LSF983 Plus	Macro, Acrylic	H ⁺	45-55	0.72-0.80	≥ 4.5	0.315-1.60
SEPLITE® LSF983 HC	Macro, Acrylic	H ⁺	47-53	0.72-0.80	≥ 4.6	0.315-1.60
SEPLITE® LSF983(H/Na)	Macro, Acrylic	H/Na ⁺	44-58	0.72-0.80	≥ 4.2	0.315-1.60
SEPLITE® LSF983(H/K)	Macro, Acrylic	H/K ⁺	44-58	0.72-0.80	≥ 4.2	0.315-1.60
SEPLITE® LSF983(Mg)	Macro, Acrylic	Mg	50-60	0.78-0.84	≥ 4.3	0.315-1.60
SEPLITE® SC 130NS	Gel, ST-DVB	Na ⁺	43-48	0.82	≥ 2.0	0.315-1.25
SEPLITE® LSF978	Gel, ST-DVB	Na ⁺	43-48	0.78-0.87	≥ 1.9	0.315-1.25



SELECTIVE REMOVAL

Sunresin dedicated to produce diversified products to satisfy customized requirements. The table below shows you how to choose the product for a given application.

Product	Type	Application	Equivalent
SEPLITE® LSC 710	Iminodiacetic	Heavy metal removal from solutions	Lewatit Tp207, Amberlite IRC748, Purolite S930
SEPLITE® LSC 720	Thiouonium	Heavy metal removal, Au, Pt, Pd, Hg, etc	Purolite S920
SEPLITE® LSC 740	Thiol	Mercury removal	Purolite S924
SEPLITE® LSC 724	Thiourea	Mercury removal, metal separation and recovery	Lewatit TP214
SEPLITE® LSC 750	Amino phosphonic	Purification of secondary brine in chlor-alkali plants	Lewatit Tp260, Amberlite IRC747
SEPLITE® LSC 760	Amino phosphonic Aluminum-loaded	Fluoride removal	
SEPLITE® LSC 780	N-Methylglucamine	Boron removal	Amberlite IRA743, Purolite S108
SEPLITE® LAR 714	Chelating	Highly arsenic removal	Purolite Arsenxnp
SEPLITE® LSI 106	Tributylamine, Macro type	Perchlorate removal	Purolite A530E
SEPLITE® LSI 106 G	Tributylamine, Gel type	Perchlorate removal PFOS, PFOA removal	Lewatit TP106
SEPLITE® LSI 106 plus	Triethylamine	Nitrate removal	Amberlite IRA996, Purolite A520E



Sunresin supplies a complete range of products that have been expertly designed to provide optimum performance in a wide array of specific end use ion exchange resin markets. Many of these products were developed based upon customer requests to address specific needs using ion exchange resin technology.

Our packaging solutions ensure that our products are delivered to you in the best possible manner. Whether you need small bags, drums, boxes, bulk bags, or tankers, we can supply the product in the appropriate packaging. We produce and ship our products globally and meet the latest international packaging standards and shipping regulations.

Our packaging solutions range from PE bags, super sacks, carton containers and fiber drums to aluminum foil bags. Each option represents the optimal mix of performance and value that best fits your particular needs.

Sunresin not only supplies a broad range of ion exchange resins for many different applications and markets, we also offer many flexible options for packaging and shipment as per customer's requirements.

The main specific types of packaging as following:

- 25 liter bags @ 40 on a 1 cbm pallet
- 1 cuft bags @ 42 on a pallet
- 1 cbm big bag on a pallet
- 200 Liter drums @ 4 on a pallet
- 50 Liter drums @ 9 or 18 on a pallet

SEPLIFE® Products for Life Science

- Resins for Solid Phase Synthesis Carrier
- Resins for Enzyme Carriers
- Chromatography Resins



Resins for Solid Phase Synthesis Carrier

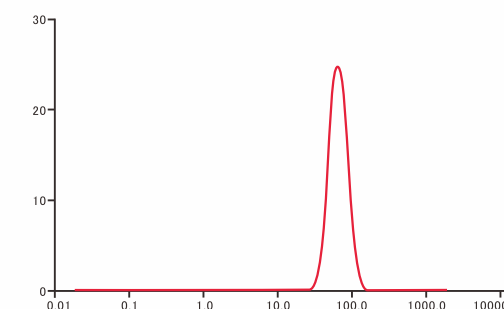


Solid phase synthesis carrier series are rich in variety, complete in specifications and stable in performance. At present, we have established close cooperation with many famous polypeptide synthesis companies, and our products have been sold to more than ten countries.

Carrier skeleton mainly includes polystyrene / DVB, DEG series, TEG series, PEG series and other series, to meet the majority of peptide synthesis needs

Sunresin provides customized carriers, such as pre-loaded amino acid carriers, special swelling or specific groups, loaded carriers, resin removal, etc.

Product	Function
Polystyrene resin	
Merrifield resin	
2-Chlorotrityl Chloride resin	
Wang resin	
Aminomethyl resin	
MBHA resin	
Rink amide resin	
Rink amide-AM resin	
Rink amide-MBHA resin	
Sieber amide resin	
PAM resin	



Applications

Widely used in the field of peptide and protein synthesis. Such as:

- Cardiovascular drugs: synthesis of bivudududine (Bivalirudin) and Eptifibatide
- Diabetes drugs: Exenatide and Leila Lou (Liraglutide)
- Drugs for improving immunity: thymus five peptide and thymus method
- Antineoplastic agents: Bushrui Lin (Buserelin), Gore Sherry Lin (Goserelin) and octreotide (Octreotide).
- Osteoporosis: salmon calcitonin (Calcitonin) and so on.

Resins for Enzyme Carriers

Compared with liquid enzyme, immobilized enzyme has some advantages when it is used for enzyme catalysis. For example, it is easy to be separated, possible to be utilized circularly, easy to control the reaction, enzyme concentration can be increased in reaction zone. Immobilized enzyme are widely applied in industries like biopharmaceutical and food processing. Enzyme carriers are the most important matrix to fix enzyme.

Epoxy resins

Epoxy-activated resins allow a simple and fast immobilization of enzymes by multipoint covalent binding between the enzyme and resin. Seplife® epoxy resins are porous, robust and hydrophilic. All epoxy acrylate resins are designed to form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature. Epoxy acrylates can be used in either stirred tank or bed reactor.

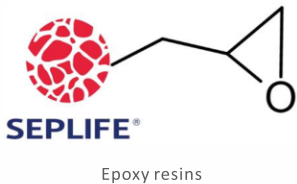


Table 1. Seplife® epoxy acrylate resins for enzyme immobilization

Product	Type	Functional Group	Immobilization	Pore Diameter(Å)	Particle size (micron) ¹	Total moisture (%)
Seplife® EMC7014	Epoxy acrylate	Epoxy	Covalent	400-600	150-350	58-68
Seplife® EMC7025	Epoxy acrylate	Epoxy	Covalent	300-500	150-350	58-68
Seplife® EMC7032	Epoxy/butyl acrylate	Epoxy	Covalent	200-400	150-350	55-65

¹ Customization of particle size is available

Amino resins

Seplife® amino acrylate resins allow covalent enzyme immobilization. The resins are functionalized with primary amines, and the covalent immobilization is performed by pre-activation with glutaraldehyde. Reaction of the aldehyde groups with amino groups of enzymes forms Schiff bases which are very stable in a pH range 3-8 and provide the so called multipoint covalent binding. Seplife® amino resins are porous, robust and hydrophilic. All amino acrylate resins are designed to form very stable covalent linkages with different protein groups (amino, thiol, phenolic) under very mild experimental conditions of pH and temperature. Amino acrylates can be used in either stirred tank or bed reactor.



Table 2. Seplife® amino acrylate resins for enzyme immobilization

Product	Type	Functional Group	Immobilization	Pore Diameter(Å)	Particle size (micron) ¹	Total moisture (%)
Seplife® EMC7120S	Amino acrylate	Amino (long spacer C6)	Covalent	200-400	100-300	50-60
Seplife® EMC7120M	Amino acrylate	Amino (long spacer C6)	Covalent	200-400	300-700	50-60
Seplife® EMC7225S	Amino acrylate	Amino (short spacer C2)	Covalent	500-700	100-300	60-70
Seplife® EMC7225M	Amino acrylate	Amino (short spacer C2)	Covalent	500-700	300-700	60-70

¹ Customization of particle size is available

Affinity, ionic and adsorption immobilization

Seplife® enzyme carriers also include resins for:

- Adsorption: Enzyme immobilization by adsorption is particularly useful for all enzymes that need to be used in oils and organic solvents.
- Ionic immobilization: Enzyme immobilization by ionic interaction depends on the isoelectric point of the enzyme, its optimal pH of activity and the ionic strength of the immobilization buffer.
- Affinity immobilization: Enzyme immobilization by affinity is suitable for recombinant enzymes that are manufactured containing an His-Tag.

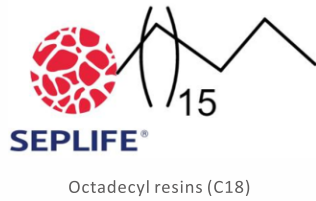
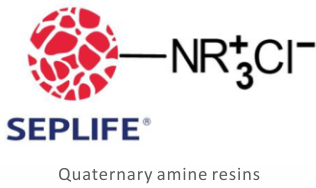


Table 3. Seplife® Affinity, ionic and adsorption resin for enzyme immobilization

Product	Type	Functional Group	Immobilization	Pore Diameter(Å)	Particle size (micron) ¹	Total moisture (%)
Seplife® Chelex7350	Iminodiaceticacrylate	Iminodiacetic (Na ⁺) IDA	Affinity	800-1000	100-250	60-70
Seplife® EMC7435	Ionic styrene/DVB	Quaternary amine (Cl ⁻)	Ionic	500-700	315-1250	60-70
Seplife® EMC7528	Octadecyl acrylate	Octadecyl (C18)	Adsorption	200-400	400-1000	55-65
Seplife® EMC1020	Styrene/DVB	None	Adsorption	500-1000	300-900	45-55
Seplife® EMC1040	Acrylate/DVB	None	Adsorption	150-300	300-700	55-65

¹ Customization of particle size is available

Agarose Base Chromatography Media

Gel Filtration Chromatography Media (GF)	Ion Exchange Chromatography Media(IEC)	Large-scale Chromatography media	Hydrophobic Interaction Chromatography Media (HIC)	Affinity Chromatography Media(AC)	Epoxy activated Chromatography Media
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Note: 1. Particle diameter: 50-150 μm, or can be adjusted according to requirements.
2. For more information please contact us

Dextran Base Chromatography Media

Gel Filtration Chromatography Media (GF)	Ion Exchange Chromatography Media(IEC)	Ion Exchange Chromatography Media(IEC)	Hydroxypropylated Dextran Chromatography Media	Cross-linked Allyl Dextran Chromatography Media
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Note: 1. For more information please contact us



Chromatography pre-packed column

Seplife® pre-packed column is produced by the standard loading process of the self-developed and manufactured chromatographic medium, hollow column tube and accessories. The production and inspection process is strictly carried out in accordance with GMP standards to ensure that each pre-packed column produced is stable and the separation effect is good to meet the customer's purification requirements. It can be directly connected to the syringe or chromatographic system to use, save time and improve efficiency.

Polymer-based Chromatography Resins

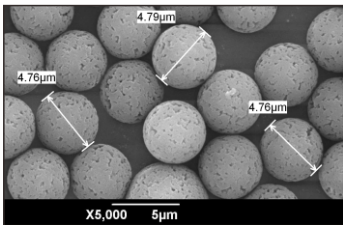
Seplife® polymer-based chromatography resins are mainly used in the preparation, separation and purification process of biomacromolecules, biomolecules, peptides, chemical drugs, natural products and other small molecules to improve product quality and process economy. Antibodies, antigens, polypeptides, hormones, enzymes and growth factors are important components of biological products. The economical and efficient purification and separation scheme is the key factor to determine the success of production. The choice of chromatography resins and process must be safe and effective, which can effectively remove impurities such as host cell proteins, DNA, viruses, and endotoxins, and maintain the activity and recovery rate of quality effective substances.

Chromatographic technology and applicable objects

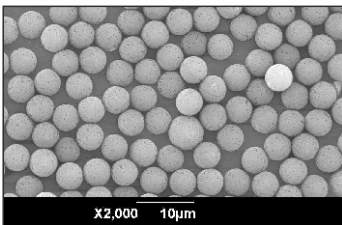
Purification target	Chromatography technologies
Antibody	Affinity, IEX, Multi-modal
Recombinant protein	IEX, Affinity, Size Exclusion, Reverse-phase
Blood products	IEX, Affinity, Size Exclusion
Vaccine (human and veterinary)	IEX, Size Exclusion, Microcarrier (cell culture), Multi-modal
Nucleic acid	Affinity, IEX, Reverse phase
Peptide	IEX, Reverse phase
Biological small molecule	IEX, Reverse phase
Natural products	Reverse phase, LH-20

Characteristics of the resins

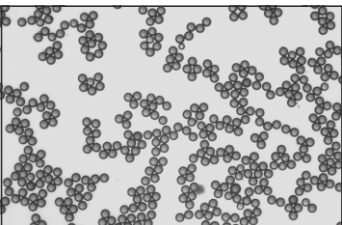
Strengths	Achieved effects
Relatively high dynamic capacity at high flow rate	High output
High pressure resistance, high flow rate	High production efficiency
Good chemical stability	Easy for CIP
High selectivity and binding force of target substance	High yield
High recovery of target activity	High output
Uniform particle size distribution	High resolution
Efficient impurity removal ability (virus, endotoxin, DNA, etc)	High purity products
Complete regulatory support documents	Process validation and audit support



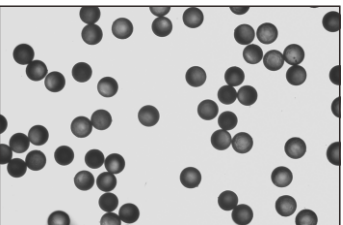
4.75 μ m



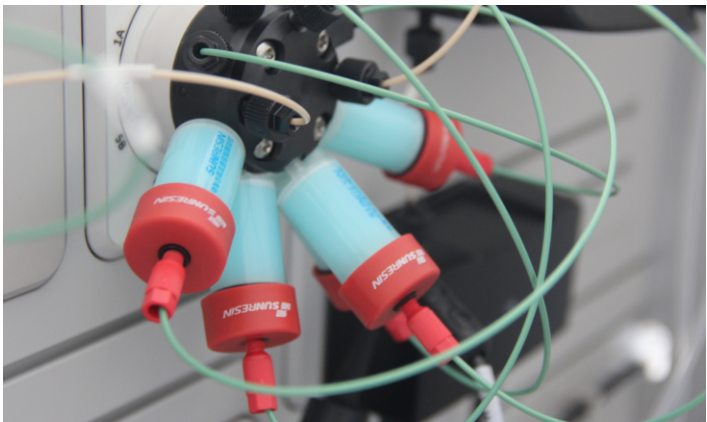
10 μ m



20 μ m



50 μ m



For Packing and Ordering information, please refer to our special brochure of Chromatographic Resins, or reach out to our Sales for further information.

SEPSOLUT® EQUIPMENT PACKAGE

- Simulated Moving Bed (SMB)
- Fixed Bed (Manual/Automatic)
- Simulated Moving Bed Chromatography (SMBC/SSMB)
- Skid Mounted Unit
- EPC project and Operation support
- Customized Technical Service



As the most advanced resin solution provider in China, Sunresin has researched and developed unique tech-route for SMB and fixed bed based on enormous studies on resin techniques and relevant application realization. Due to the perfect integration of frontier resin technology application and precisely automation control practices, Sunresin has successfully designed and delivered numerous of systems for customers in applications as De-ionized Fruit Juice, Xylose Separation & Processing, Lithium & Gallium recovery and plant extraction etc.

Simulated Moving Bed (SMB)

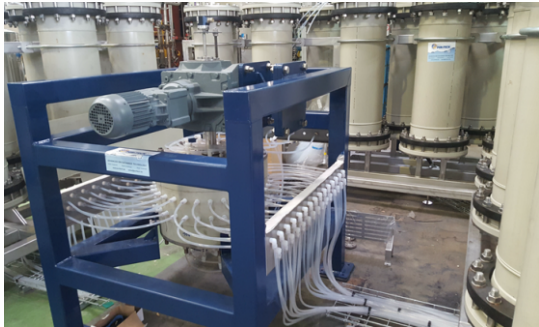
Sepsolut® simulated moving bed (SMB) is the patented system of Sunresin. It combines Sunresin's advantages in adsorbent materials, continuous adsorption and desorption, and automatic control. The function of the system is realized through Sepsolut® valve array and Puritech® Multi-channel valve, making it the most advanced system in the adsorption and separation industry.

- Benefits from Sunresin SMB Technology:**
- Significantly Upgrade the Resin Utilization Efficiency
 - Distinguished Reduction of Chemical Waste from System Operation
 - Less Pipes, Instruments and Land Occupation due to Extraordinary Impact Design
 - High Stability and Flexibility for System Operation
 - Higher Economic Reward Overall

Sepsolut Valve-array System and Puritech Multi-channel Valve System

Sepsolut® & Puritech® Complementation		
Item	Sepsolut® valve-array	Puritech® Multi-channel valve
Features	• Resin and columns fixed, simulate moving by valves on & off. • No mechanical abrasion, low power consumption. • Suitable for systems with huge resin volume.	• Resin and columns fixed, sophisticated internal material distribution system, simulate moving by multi-port valves on & off. • Suitable for system with various aterials, complex process and high separation requirements.

Example



Fixed Bed (Manual/Automatic)

Combining advanced process and intelligent control system, Sunresin is able to deliver fixed bed processing unit with both manual and automatic solution for better suiting with customers' operation demands. The flexibility, stability and operation efficiency has been widely acknowledged by customers all over the world.

Application References

- Purification of Amino Acid, Lactic Acid, Lemon Acid, Citric Acid
- Deionization of Juice
- Purification of VC
- Gallium recovery and Fe removal in Alumina production from coal ash
- Lithium carbonate recovery from salty brine lakes
- High fructose corn syrup separation
- Iohexol production
- Co-Ni separation
- Nickel recovery



Sunresin perfectly combines its own packing preparation technology and auto-control technology, developed Sepsolut® Simulated Moving Bed Chromatography (SMBC) system, which has the characteristics of high separation accuracy, good product quality, high yield and low solvent consumption. This system is widely applied in the separation and purification of functional sugars and amino acid analogues, realizing the continuity and stability of fine separation and production.

Application References

- Fructose & glucose separation
- Fructose & allulose separation
- Leucine purification
- Tryptophan purification
- Glycine mother liquor recovery



In order to meet the needs of domestic and foreign customers for small and medium-sized production systems, Sunresin innovatively optimize and integrates the separation system into a mobile and easy-to-assemble platform based on its deep understanding of resin application technology, process and equipment, and its advantages in modular control systems, thus complete a Skid mounted Unit. The Skid mounted Unit has been used as a perfect standard product to meet the needs of miniaturized production in various fields. It has greatly shortened the period from design to finished products, effectively simplified the difficulty of customer site construction, reduced project investment and floor area.

- Application References**
- Honey, anthocyanin extraction
 - Starch sugar
 - Boron removal from petrochemical wastewater
 - Arsenic and Nitrate removal from drinking water
 - De-acidification of MTBE extraction water



With strong Engineering team and key know-how for IX resins, Sunresin could deliver proven EPC solutions in the world or customized whole solution package based on customer factory conditions. Based on the experience as the Global Engineering Contractor, we SUNRESIN provides a wide range of services such as feasibility studies, process development, surveys, engineering, procurement and construction. SUNRESIN has abundant records of supporting companies' expansion. In past several years, Sunresin has successfully implemented our state of art know-how and EPC engineering strength in a lot of world largest IX projects.

Application References

- Lithium carbonate project---Jintai, Qinghai
- Gallium extraction project—CHALCO Guizhou
- Fly ash gallium extraction project---Shenhua Group Co. Ltd.
- Calcium chloride removal and iron removal project--- Shenhua Group Co. Ltd.
- Pigment extraction---DOHLER Turkey
- Citric acid demineralization---Turkey



Sunresin provides specialized and targeted services for different customer needs, forming menu-style services, offering a package of solutions for customers and maximizing customer value.

- Service content**
- High performance materials and application technology support
 - System engineering, including process design, equipment design and auto-control system design.
 - System installation and commissioning
 - EPC project engineering
 - Technical training for system operation

