



Ion Exchange Resin Products and Services

Water Technologies

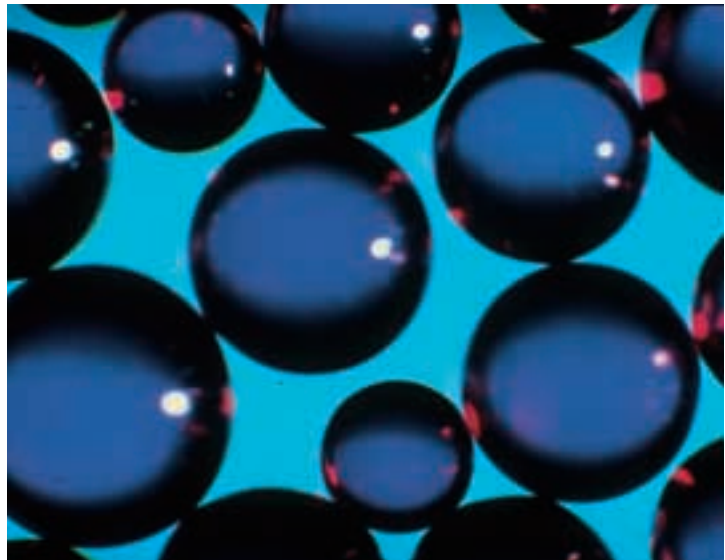
SIEMENS

Wherever You Are, We Know Your Water



At Siemens, we combine expert technical and operations knowledge with the largest network of trained, field service technicians. Our field support includes trained service personnel with experience in maintaining and operating our own systems as well as equipment provided by other companies. Our technicians provide prompt, courteous service to help customers manage their water treatment system with minimum downtime and maximum use of direct labor and operating budgets. These service technicians are ready to assist customers from over 85 offices in North America. Local service branches allow us to schedule service and repairs when you need them, and keep travel expenses to a minimum. In fact, we are positioned to reach over 85% of the North American population in less than a two hour drive.





Resin Products and Services for Peak Performance

Siemens Water Technologies is a leader in developing new technologies and applications for resin. We also work closely with the leading resin manufacturers to improve existing product quality and to develop new products to meet changing application needs. Our experience in ion exchange technology spans greater than 80 years and is backed by a rich history of businesses recognized as leaders in the water treatment industry.

Siemens offers a complete support program to provide our customers with the products and support services necessary to maintain their ion exchange systems for peak performance and long-term operation. In addition to being the largest distributor of ion exchange resin, we also provide a full range of services including analytical testing, resin removal/reinstallation, cleaning and reconditioning. For specialty applications, we offer customized high-purity resin processing and blending to meet FDA requirements for the food and beverage and pharmaceutical markets. And, when it is time to dispose of your spent resin, we can assist in coordinating options for investment recovery or proper disposal. Siemens offers complete support at every phase throughout the life of your system.

Industry-recognized products, experienced technical support and an expertly trained field service team are all available to you as part of the offering from Siemens.

Siemens Water Technologies ion exchange resin program features

- Large inventory of stocked resins, including USF™ resins and resins from other leading manufacturers
- Same day shipment of stocked resins
- Regional resin distribution/stocking centers
- Extensive analytical and testing laboratory
- Customized packaging and delivery options
- Disposal and investment recovery coordination
- Performance Evaluation and Optimization
- Service and preventative maintenance contracts
- Personnel training and start-up services
- Temporary/mobile water treatment systems
- 24/7 customer service
- Trained, technical support staff
- 85+ sales and service branches throughout North America and Canada

Regional stocking and distribution centers:

Los Angeles, CA
Jacksonville, FL
Rockford, IL
Geismar, LA
Conroe, TX
Fallsington, PA
Ancaster, Ontario, Canada



Quality Assured with USF™ Ion Exchange Resin

USF™ ion exchange resin is manufactured by the leading resin companies to meet Siemens' more stringent, performance-based specifications. These standards are higher than those used by the manufacturers in testing their own products.

USF™ ion exchange resin was developed in response to inconsistent performance and quality trends experienced in the resin marketplace. Siemens provides process guarantees on all resins sold and therefore, it became necessary to establish new, more stringent resin performance specifications to ensure our resins met stated expectations.

USF™ ion exchange resins are guaranteed to meet our performance specifications. The resins are tested in our state-of-the-art analytical laboratory to verify compliance to specifications based on the following:

- Capacity
- Percent Salt Split Capacity vs. Total Capacity
- Percent Conversion
- Percent Moisture
- Particle Size
- Percent Whole, Cracked, Broken
- Bead Strength
- Metallic and inorganic impurities
- Kinetics

Additional performance testing is also available upon request.

Some of the advantages to choosing USF™ brand resin include:

- Life cycle cost savings when compared with equivalent resin products
- Manufactured and tested to meet higher, more stringent performance specifications
- QA/QC program is ANSI N45.2, 10CFR50 (appendix B) and 10CFR21 compliant to meet nuclear safety requirements
- Process performance guarantees available upon request
- Extensive technical support and resin application knowledge
- Annual resin analysis at no charge
- Custom packaging to meet your volume needs
- Certificates of Analysis, Certificate of Conformance, and shelf life statements available upon request

USF™ Ion Exchange Resin and Media Cross Reference Guide

Siemens is the largest distributor of ion exchange resin. We are able to supply you resin from all of the leading manufacturers, and are the largest stocking distributor of Dowex® brand resin.

USF™ Brand	Amberlite® Rohm & Haas	Lewatit® LANXESS	Ionac® Sybron	Diaion® Mitsubishi	Dowex® Dow Chemical	Purolite® Purolite Co.
Weak Acid Cation						
USF C-271	IRC-76	CNP-80			MAC-3 (Dowex Marathon® MAC-3)	C-106
USF C-281	IRC-86		CC	WK-40		C-105
Strong Acid Cation						
USF C-211	IR-120 (Amberjet® 1200)	(Lewatit MonoPlus® S-100)	C-249	SK-1B	HCR-S (Dowex Marathon®C)	C-100
USF C-361	IR-122 (Amberjet® 1500)	(Lewatit MonoPlus® S-200)	C-250	SK-110	HGR-W2 (Dowex Marathon® C-10)	C100X10
USF C-381	IR-200	(Lewatit MonoPlus® SP-112)		PK-228	(Dowex Marathon® MSC)	C-150
Weak Base Anion						
USF A-399	IRA-96	(Lewatit MonoPlus® MP-64)		WA-30	(Dowex Marathon® WBA-2)	A-100
USF A-444	IRA-67	VP OC 1072				A-845
Strong Base Anion						
USF A-244	IRA-410 (Amberjet® 4600)	(Lewatit MonoPlus® M-600)	ASB-2	SA-20A	SAR (Dowex Marathon® A2)	A-300
USF A-284	IRA-400 (Amberjet® 4200)	(Lewatit MonoPlus® M-500)	ASB-1	SA-10A	SBR-C (Monosphere® 550A)	A-600
USF A-464	IRA-402 (Amberjet® 4400)		ASB-1P	SA-12A	SBR-P (Dowex Marathon® A)	A-400
USF A-674	IRA-900	(Lewatit MonoPlus® MP-500)	A-641	PA-312	(Dowex Marathon® MSA)	A-500
A-714	IRA-458	VP OC 1071				A-850
Mixed Bed						
USF TM-9						NRW-37
USF EDM						
USF NR-6	IRN-150	SM 94	NM-60		(Dowex Marathon® MR-3)	
USF NR-14			NM-73			NRW-37
USF NR-30						EX MB

() indicates Uniform Particle Size Equivalent

USF™ Resins - General Industry Grade

MODEL	TYPE	IONIC FORMS	DESCRIPTION
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Cation

USF C-211	8% Gel	Na and H	Standard cation resin used for softening and demineralization.
USF C-361	10% Gel	Na and H	Premium cation resin used in hot condensate polishing, and more resistant to oxidative attack and physical attrition.
USF C-381	Macroporous	Na and H	High cross-linked macroporous strong acid cation resin used in hot condensate polishing, highly resistant to oxidative attack, and suitable at elevated temperatures.
USF C-271	Acrylic Weak Acid	H	Acrylic weak acid gel cation resin used in dealkalizing and softening.
USF C-281	Acrylic Weak Acid	H	Acrylic weak acid macroporous cation resin used in dealkalizing and softening.

Anion

USF A-244	Gel Type II	Cl and OH	Type II strong base gel anion with high regeneration efficiency.
USF A-284	Gel Type I	Cl and OH	Type I standard strong base gel anion used in demineralization with good silica removal. Recommended in non-regenerable applications.
USF A-464	Gel Type I Porous	Cl and OH	Type I porous strong base gel anion used in demineralization with good silica removal. Recommended in regenerable applications.
USF A-674	Type I Macroporous	Cl and OH	Type I macroporous strong base gel anion used in demineralization with good silica removal and better resistance to organic fouling. Recommended in regenerable applications on surface influent waters.
USF A-714	Acrylic Gel	Cl	Acrylic strong base anion resin used in demineralization and organic traps. Highly resistant to organic fouling.
USF A-399	Weak Base Macroporous	Free Base	High capacity weak base anion resin used in demineralization and acid removal applications. Excellent regeneration efficiency.
USF A-499	UPS Weak Base	Free Base	Uniform particle size weak base anion resin.
USF A-444	Acrylic Weak Base	Free Base	High capacity weak base anion resin used in demineralization and acid removal applications. Recommended in applications with high organics. Excellent regeneration efficiency.

Mixed Bed

USF TM-8	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-211 (H) and A-244 (OH). High capacity general purpose mixed bed used in demineralization.
USF TM-9	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-211 (H) and A-464 (OH). General purpose mixed bed used in demineralization when silica reduction is important.
USF NR-6	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-211 (H) and A-284 (OH). High capacity general purpose mixed bed used in demineralization when silica reduction is important.
USF NR-30	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-361 (H) and A-464 (OH). General purpose mixed bed used in demineralization when silica reduction is important. Good separation characteristics for regenerable applications.
USF EDM	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-211 (H) and A-284 (OH). Recommended for EDM and other metal removal applications.

USF™ Resins - Electronics Grade

MODEL	TYPE	IONIC FORMS	DESCRIPTION
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Cation

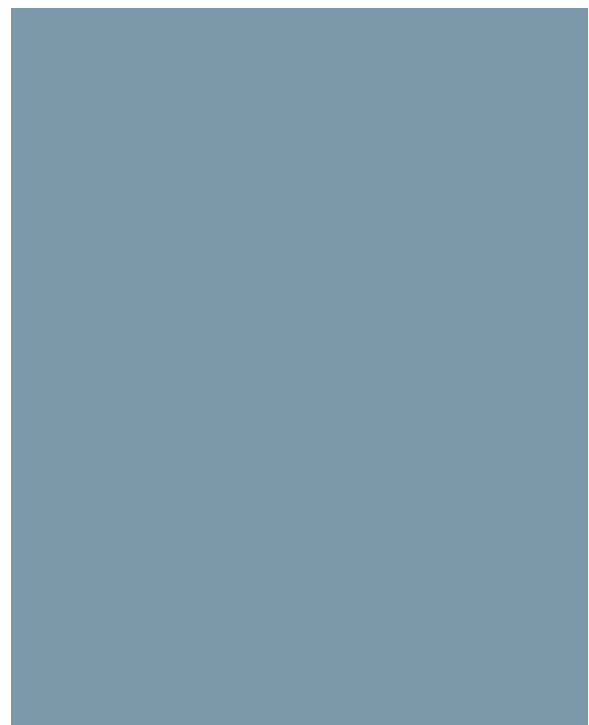
USF C-211 SG (H)	8% Gel	H	Specially processed cation resin for demineralization applications in which low TOC leachables are desired.
USF C-361 SG (H)	10% Gel	H	Specially processed cation resin for mixed bed demineralization applications in which low TOC leachables are desired.
USF C-361 MEG (H)	10% Gel	H	Specially processed cation resin for mixed bed demineralization applications in which low TOC leachables and extremely low cross contamination are desired.
USF C-361 MEG PPQ (H)	10% Gel	H	Upgraded USF C-361 MEG (H) with extremely low sodium content recommended for microelectronics applications.
USF C-381 SG (H)	Macroporous	H	Specially processed cation resin for mixed bed demineralization applications in which low TOC leachables are desired.
USF C-373 SG (H)	UPS 10% Gel	H	Uniform Particle Size version of USF C-361 SG (H).
USF C-373 MEG (H)	UPS 10% Gel	H	Uniform Particle Size version of USF C-361 MEG (H).

Anion

USF A-284 SG (OH)	Gel Type I	OH	Specially processed anion resin for demineralization applications in which low TOC leachables are desired.
USF A-464 SG (OH)	Gel Type I Porous	OH	Specially processed anion resin for regenerable demineralization applications in which low TOC leachables are desired.
USF A-464 MEG (OH)	Gel Type I Porous	OH	Specially processed anion resin for mixed bed demineralization applications in which low TOC leachables and extremely low cross contamination are desired.
USF A-464 MEG PPQ (OH)	Gel Type I Porous	OH	Upgraded USF A-464 MEG (OH) with extremely low sodium content recommended for microelectronics applications.
USF A-254 SG (OH)	UPS Gel Type I Porous	OH	Uniform Particle Size version of USF A-464 SG (OH).

Mixed Bed

USF NR-6 SG (H/OH)	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-211 SG (H) and A-284 SG (OH). High capacity mixed bed ideal in non regenerable applications requiring low TOC leachables.
USF NR-30 SG (H/OH)	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-361 SG (H) and A-464 SG (OH). Ideal for regenerable applications requiring low TOC leachables.
USF NR-30 MEG (H/OH)	Mixed Bed	H/OH	1:1 chemical equivalent mix of C-361 MEG (H) and A-464 MEG (OH). Ideal for regenerable applications requiring low TOC leachables and extremely low cross contamination.
USF NR-30 MEG PPQ (H/OH)	Mixed Bed	H/OH	Upgraded USF NR-30 MEG (H/OH) with extremely low sodium content recommended for microelectronics applications.



USF™ Resins - Pharmaceutical/Food and Beverage

MODEL	TYPE	IONIC FORMS	DESCRIPTION
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Cation

USF C-211 XRR	8% Gel	Na and H	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications.
USF C-361 XRR	10% Gel	Na and H	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications.

Anion

USF A-244 XRR	Gel Type II	Cl and OH	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications.
USF A-464 XRR	Gel Type I Porous	Cl and OH	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications with low silica requirements.
USF A-464 SG (OH)	Gel Type I Porous	OH	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications with low silica and TOC requirements.

Mixed Bed

USF TM-8 XRR (H/OH)	Mixed Bed	H/OH	Cross regenerated with FDA compliant process for use in food and pharmaceutical applications.
USF TM-9 XRR (H/OH)	Mixed Bed	H/OH	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications.
USF NR-6 SG (H/OH)	Mixed Bed	H/OH	Cross regenerated with FDA compliant process for use in food, pharmaceutical and dialysis applications with low silica and TOC requirements.

USF™ Resins - Condensate Polishing and Nuclear

MODEL	TYPE	IONIC FORMS	DESCRIPTION
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Cation

USF NR-1 (H)	8% Gel	H	Low metals and low leachables cation resin for use in primary, secondary and rad waste applications.
USF C-361C (H)	10% Gel	H	Low metals and low leachables cation resin for use in condensate polishing and high flow applications.
USF C-361 MEG (H)	10% Gel	H	Low metals and low leachables cation resin processed for superior separation in critical mixed bed applications.
USF C-381C (H)	Macroporous	H	Low metals and low leachables macroporous cation resin for use in high flow and high temperature applications.
USF C-373 PSSG (H)	UPS 10% Gel	H	Low metals and low leachables uniform particle size cation resin processed for superior separation in regenerable mixed bed applications.
USF PURCAT C-373 (H)	UPS 10% Gel	H	Uniform particle size cation resin super cleaned per our patented processing procedure for use in applications requiring the critically low TOC extractables such as condensate polishing applications using alternate amine chemistry.
USF C-471 RLS (H)	14% Gel	H	Low metals and low leachables high cross linked cation resin for use in condensate polishing applications with extremely low sodium requirements.
USF TCD-1 (H)	Indicator Dyed 8% Gel	H	Indicator dyed cation resin used in conductivity measurements

Anion

USF NR-2 LC (OH)	Gel Type I	OH	Low chloride, low leachable anion resin for primary, secondary and rad waste applications.
USF A-284C (OH)	Gel Type I	OH	Low leachable anion resin processed for high kinetics and superior separation in mixed bed applications.
USF A-284 LS (OH)	Gel Type I	OH	Less separable anion resin with low leachables for use in BWR condensate polishing and anion underlayment applications.
USF A-284 RLS (OH)	Gel Type I	OH	Specially processed anion resin for condensate polishing applications with extremely low sodium requirements.
USF A-464 LC (OH)	Gel Type I Porous	OH	Low chloride, low leachable anion resin for use in primary, secondary and rad waste applications.
USF A-464 MEG (OH)	Gel Type I Porous	OH	Low leachable anion resin processed for superior separation.
USF A-254 PSSG (OH)	UPS Gel Type I Porous	OH	Uniform particle size anion resin processed for low leachables and superior separation.
USF A-674 PSMBG (OH)	Macroporous	OH	Macroporous anion resin processed for low leachables and superior separation.

Mixed Bed

USF NR-6 LC (H/OH)	Mixed Bed	H/OH	Low chloride, low leachable mixed bed for use in primary and rad waste applications.
USF NR-31 LC (H/OH)	Mixed Bed	H/OH	Low chloride, low leachable mixed bed for use in primary, secondary, condensate polishing and rad waste applications.
USF NR-57 LC (H/OH)	Mixed Bed	H/OH	Uniform particle size high cross linked gel cation and uniform particle size gel anion mixed bed processed for low leachables and superior separation in condensate polishing applications.
USF NR-63 RLS (H/OH)	Mixed Bed	H/OH	High cross linked gel cation and gel anion mixed bed designed for steam generator blow down demineralization applications with extremely low sodium requirements.
USF NR-62 Stator Cooling (H/OH)	Mixed Bed	H/OH	High capacity mixed bed designed for stator cooling applications.
USF NR-35 LC (H/OH)	Mixed Bed	H/OH	Macroporous cation, gel anion mixed bed with low leachables and low chlorides designed for blow down demineralization applications and suppression pool for cobalt and cesium control.
USF NR-20 LC (Li7/OH)	Mixed Bed	Li7/OH	Lithium7 hydroxide form mixed bed with low leachables and low chlorides for use in primary systems.



Specialized Services for System Efficiency and Cost Effective Operation

Siemens offers a wide range of support services to help maintain ion exchange systems and eliminate the liabilities associated with spent resin handling and disposal. Our trained service technicians are available to provide services from over 85 branch locations throughout North America.

Resin Removal and Replacement

Siemens team of trained professionals will provide complete project coordination, from predisposal testing to new resin installation to used resin landfill disposal or investment recovery (used resin brokers). With complete responsibility in Siemens' hands, you can be assured that your project will be completed professionally, on schedule, within budget and most importantly, in full compliance with all local and governmental regulations.

Removal and Replacement Service includes:

1. Pre-disposal Toxicity Characteristic Leachable Procedure (TCLP) testing for hazardous chemicals and metals.
2. Pre and post disposal documentation.
3. Removal of existing resin.
4. Visual inspection of the service vessel.
5. Installation of the new resin.
6. Pre-arranged disposal at a licensed land fill or investigate potential investment recovery through used resin brokers.

Laboratory Testing and Process Evaluation

To ensure optimum performance, Siemens recommends periodic laboratory analysis of your ion exchange resin. Siemens owns and operates a state-of-the-art laboratory and is capable of determining resin quality, as well as diagnosing operating problems and evaluating new ion exchange products.

Standard laboratory resin testing

- Capacity before/after clean up steps
- Percent moisture
- Particles size
- Iron Fouling
- Microscopic visual examination

Additional testing available

- Percent conversion
- Bead strength
- Metallic impurities
- Cross contamination
- Kinetics (Mix Bed Test)
- Kinetics (MTOC Extractables 16 hour soak Dynamic Mass Transfer)
- Organic Cl, SO₄ TOC Extractables
- 16 hour soak (UV)
- Dynamic (UV)
- Parr Bomb
- Terminal Settling Velocity (TSV)
- Super Fines (-60 mesh)



Resin Processing Facilities

- Columbus, OH
- Conroe, TX
- Fallsington, PA
- Jacksonville, FL
- Los Angeles, CA
- Richmond, VA
- Rockford, IL
- South Windsor, CT

Processing/Blending

Siemens provides resin processing services to meet customers high purity needs. Our specially designed facility uses microelectronics grade water (typically <3 ppb TOC, 18+ Megohm and <50 ppt Na) to ensure the integrity of the processes.

Special customer requirements may include:

- Extremely low organic leachable impurities (TOC, UV Cl, UV SO₄, etc.)
- Conversion to specific ionic forms (Li-7, K,Ca, various amines, etc.)
- Terminal Settling Velocity Modified (for improved separability)
- Custom mixing and blending of resins
- Custom packaging of resins (Mylar®, Heat sealed, 0.5-7 CF drums,
- 20-35 CF supersacks)
- FDA cycling for food and pharmaceutical applications (taste and odor free)

Resin Cleaning and Reconditioning

Resin cleaning and reconditioning services provide an option for salvaging fouled, cross-contaminated and/or exhausted resin. Siemens can remove resins, transport them to our local processing plant, convert the resins and return them to your facility. Resin cleaning extends the resin's useful life, minimizes

operating costs and reduces system downtime. The resin can be transported to and from the job site via tanker truck, 55 gallon drum, lined fiber drum, or supersack.

Bulk Transportation

Siemens offers bulk delivery of new resin and disposal of spent resins. We eliminate drum handling by slurring the resin directly from your water treatment service vessels to one of our company-owned tanker trucks. Bulk transportation greatly reduces the labor and steps involved with the documentation and administrative controls associated with temporary on-site and off-site disposal of resin.

Performance Evaluation Program

An important part of the Siemens service offering is to assist customers achieve maximum performance from their ion exchange system. Our proprietary, Performance Evaluation Program is a computer-based tool which evaluates current operating conditions and economic factors versus theoretical data. This allows us to evaluate the current resins, system operating parameters and replacement times, and make appropriate recommendations.

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