

## **Industrial Utility Water**

DuPont Multi-Tech Solutions



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### **DuPont Water Solutions Portfolio**

### The broadest in the industry



### Expertise Beyond the Product



#### **Design Software**

 The industry's first fully integrated modeling software program to integrate our leading technologies – UF, RO, CCRO, IX



#### Online Normalization Tool

 FT-Norm PRO – makes the normalization process simple to accomplish but robust enough to allow for effective monitoring of UF and RO systems



#### Webinars

- Water Education Resource
- Provides insight on Application,
   Technology and Design Best Practices
- 30+ Webinars Available Online



#### **Value Calculators**

- Cost Savings Calculator
- DuPont™ B-Free™ Calculator
- Resin Replacement Calculator
- Sustainability Calculator



#### **R&D** Capabilities

- 4 world-class R&D centers
- Real world testing conditions
- Industrial scale assets
- Best-in-class analytical lab
- Cooperation with key institutions
- Product and application experts
- Customer collaboration projects



#### **System Optimization Services**

- Testing, evaluation, and troubleshooting of IX, RO, NF and UF systems, water analysis
- Suggest corrective actions to enhance system performance
- FilmTec™ Fortilife™ DIRECTOR™, the biofilm quantification method

### **Industrial Utility Water**

### Needs and Challenges

- Water is a critical vector of nearly all industries, directly impacting both production uptime and profitability.
- The manufacturing industry accounts for 16% of global water demand, increasing to 22% by 2030.
- The United Nations Sustainable Development Goals 2030 target to substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from increasing water shortages.



### DuPont can help industrial customers

### address their key challenges



Optimize water footprint to battle **constrained water access** 



Ensure consistent water quality under feed water quality fluctuations and complexity



Secure trouble-free operation to **minimize unplanned downtime** and maximize production



Provide solutions for **limited footprint and mobile units** 



Reduce or even eliminate chemical consumption to achieve more environmentally-friendly operations

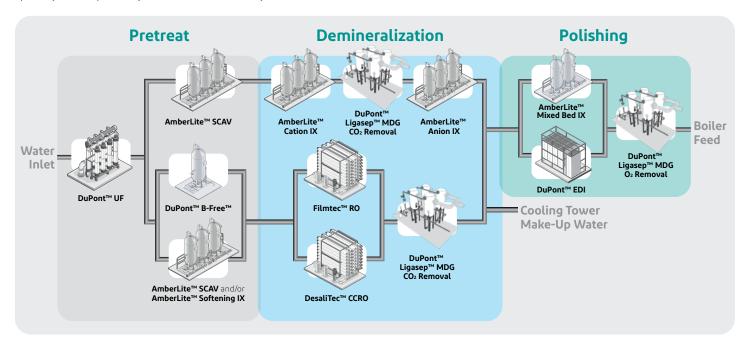


Optimize energy consumption to reduce manufacturing cost and carbon footprint

### **DuPont Multi-Tech Solutions**

### for Industrial Utility Water

At DuPont Water Solutions, we develop integrated and effective solutions that meet the world's growing water and energy demands. Our diverse portfolio of technologies and solutions addresses a broad range of water treatment applications and is designed to help you overcome water challenges to produce your desired quality and quantity of industrial utility water.



### **DuPont can adapt the solution**

### to meet specific customer needs

Our best-in-class technical team supported by R&D has accumulated decades of experience across all technologies to create solutions that address a broad variety of challenges. Our understanding of water chemistry and the complexity of individual constituents enables us to recognize project needs and critical requirements.



**High recovery schemes for limited water availability sites** with closed-circuit RO (CCRO) combined with the appropriate pre-treatment and polishing technologies



Minimized plant downtime caused by biofouling with DuPont™ B-Free™ pre-treatment technology coupled with FilmTec™ RO



Chemical-free or minimum chemical usage solutions for plants facing sourcing problems or targeting to optimize EH&S profile with UF, RO, mechanical CO<sub>2</sub> and O<sub>2</sub> removal, and EDI



Robust and reliable solutions to mitigate inlet water quality fluctuations with a combination of our DuPont™ AmberLite™ HPR series resins for demineralization or fine tuned polishing, among other possible schemes.

### Suspended Solids Removal with UF

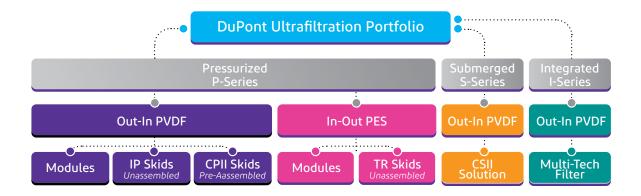
**DuPont Ultrafiltration (UF)** is a pressure-driven purification process that separates particulate matter from soluble compounds using ultrafine membrane media.

#### Compared to traditional media & sand filters, UF technology offers:

- Better & consistent filtrate quality regardless of feedwater quality upsets
- Minimal to no use of pretreatment chemicals (polymers, coagulants, pH adjustment) and associated costs for sludge disposal
- Smaller footprint and lower weight

DuPont offers a wide selection of UF modules, skids and systems that provide industries with peace-of-mind solutions to address their challenges while maintaining lowest total cost of ownership and managing a reliable and profitable operation.





Туре	Legacy Name	Fiber	Best Used For
	SFP-2860XP	PVDF	<ul><li>Containerized or small size plant</li><li>High recovery filtration with high chlorine resistance</li></ul>
	SFP-2880XP	PVDF	<ul><li>Large size plant</li><li>High recovery filtration with high chlorine resistance</li></ul>
Modules	XL 0.9 MB 60 W	PES	<ul><li>Containerized or small size plant</li><li>Low energy filtration with high TOC &amp; Virus log removal</li></ul>
	XL 0.9 MB 80 W	PES	<ul><li>Large size plant</li><li>Low energy filtration with high TOC &amp; Virus log removal</li></ul>
	XL 1.5 MB 50 W	PES	<ul> <li>Large size plant</li> <li>High TSS water, Low energy filtration with high TOC &amp; Virus log removal</li> </ul>
	IP-51 XP	PVDF	<ul><li>Containerized or small size plant</li><li>High recovery filtration with high chlorine resistance</li></ul>
	IP-77 XP	PVDF	<ul> <li>Large size plant</li> <li>High recovery filtration with high chlorine resistance</li> </ul>
Modules for skids	VI O O MP CO WIT	PES	<ul><li>Containerized or small size plant</li><li>Low energy filtration with high TOC &amp; Virus log removal</li></ul>
	XL 0.9 MB 80 WT	PES	<ul> <li>Large size plant</li> <li>Low energy filtration with high TOC &amp; Virus log removal</li> </ul>
	XL 1.5 MB 50 WT	PES	<ul><li>Large size plant</li><li>High TSS water, Low energy filtration with high TOC &amp; Virus log removal</li></ul>
Adaptive	UXA-2680 XP	PVDF	· Retrofits or replacement of existing PVDF filtration
Modules	AML-40N	PVDF	· High recovery and high chlorine resistance

### Biofouling Prevention with DuPont™ B-Free™

**DuPont™ B-Free™ pre-treatment** is a novel vessel-based media technology that efficiently mitigates the effects of biofouling in reverse osmosis (RO) systems, independent of the application.

#### DuPont™ B-Free™ system operation and maintenance

- Based on 3 different media: Protective layer, Stratum Carrier and Safeguard
- Operated top-down
- No complex measurements required other than differential pressure
- High recovery system: 98.1 99.8%
- Cleaning frequency up to once every 6–8 weeks with only water and air
- Short migration path to minimize downtime
- Sustained bio-static environment established in the feed to the RO

#### **Key Operational Benefits**

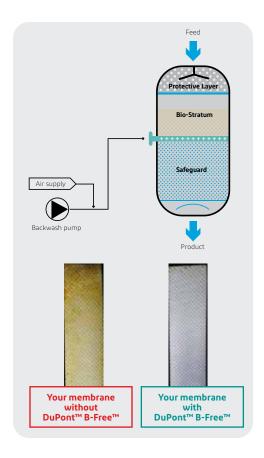
- Reduced labor intensity
- Improved supply reliability
- Reduced downtime

### Sustainability Benefits (based on 10,000 m³/d desal plant)

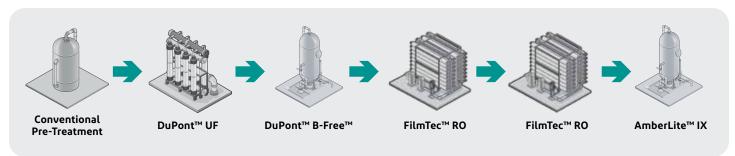
- CO<sub>2</sub> emission reduced by 25,000 kg/y
- Chemical usage reduced by 10,000 kg/y
- Water consumption reduced by 4,000 m<sup>3</sup>/y
- Solid wast reduced by 1,400 kg/y

#### **Key Cost Benefitss**

- Extended lifetime for membrane elements and cartridge filters
- Reduced chemical use
- Reduced energy consumption



#### **Typical Design**



#### DuPont™ B-Free™ Media

DuPont Product	Features
B-Free™ BFR100	Separates biomass from media during backwash and prevents loss of media. Keeps vessel inlet section clean.
B-Free™ BFR200	Grows bacteria for nutrient removal and prevents particle migration. $PO_4$ removal by cell accumulation. Excess biomass containing $PO_4$ is backwashed out of the system.
B-Free™ BFR300	Removes remaining phosphate and prevents particle migration. Safeguard for the system in the event of feed upsets. Establishes immediate & sustainable protection for downstream RO elements.

### Total Organic Carbon Removal with IX

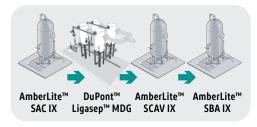
**DuPont™ AmberLite™ SCAV Resins** are organic traps that remove natural organic matter (NOM) from feedwater to protect the demineralization system from fouling-related operational issues and also reduce total organic carbon (TOC) in the treated water.

#### **Key Features**

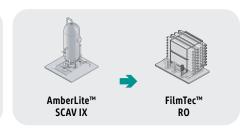
- Outstanding adsorption capacity of undesired NOM species during service
- High physical stability and excellent fouling resistance
- Offerings for conventional brine regenerated systems or new scavenger technology utilizing acid or caustic



#### **Typical Design**







#### AmberLite™ SCAV1 or SCAV2

- Fouling protection and quality improvement
- Flexible and adjustable operation
- Switch operation from highest TOC capacity to highest TOC quality if circumstances ask for it
- Use of standard bulk chemicals for regeneration – no brine
- Can fit into every existing system

#### AmberLite™ SCAV3 or SCAV4

- Fouling protection and quality improvement
- Regenerated with brine
- Helps protect primary strong acid cation (SAC) from suspended solids upsets
- Helps reduce TOC and protects downstream anion resins from fouling

#### AmberLite™ SCAV3 or SCAV4

- Reverse osmosis fouling protection for less cleanings
- Regenerated with brine
- Helps reduce TOC

DuPont Resin	Features	Best Used For
AmberLite™ SCAV1	Acrylic gel	Removal of hydrophobic and hydrophilic NOM species for high free mineral acidity (FMA) waters at acidic pH. Waters with medium to high TDS when the ratio of TOC to sulfate (ppm $C/meq\ SO_4$ ) is less than 3.
AmberLite™ SCAV2	Acrylic macroporous	Removal of high load hydrophilic and hydrophobic NOM for low FMA waters at acidic pH. Waters with low to medium TDS when the ratio of TOC to sulfate (ppm C/meq $SO_4$ ) is greater than 3.
AmberLite™ SCAV3 Cl	Styrenic macroporous	Removal of large, complex, hydrophobic NOM and color species (such as humic and fulvic components) and general polishing of organics remaining after bulk removal at neutral to alkaline pH. Recommended choice for drinking water production.
AmberLite™ SCAV4 Cl	Acrylic macroporous	Removal of high load hydrophilic and hydrophobic NOM at neutral to alkaline pH, with excellent resin lifetime and long, stable performance even under challenging operational conditions. The go-to organic scavenger for the bulk removal of NOM, and especially useful as RO pretreatment.

### Softening & Dealkalization with IX

**DuPont AmberLite™ Ion Exchange** softening resins remove cations associated with hardness (such as cacium and magnesium) from feedwater to avoid scale formation caused by precipitation of sparingly soluble salts like calcium carbonate. Ion exchange resins (IX) can also remove bicarbonate alkalinity associated with scaling.



IX softening consists of using a strong acid cation (SAC) resin in the sodium form to replace hardness ions with sodium ions. For softening high TDS waters, a high capacity weak acid cation (WAC) resin in the sodium form is used. And for dealkalization and partial softening of water, a weak acid cation resin in the hydrogen form is used to remove hardness associated with alkalinity and convert bicarbonate alkalinity to  $CO_2$  which can be later removed by degasification. Alternately, a strong base anion (SBA) resin in the chloride form can also dealkalize by exchanging carbonate and bicarbonate anions for chloride ions.

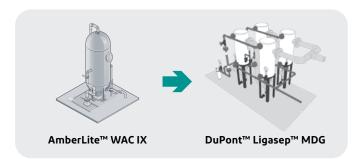


#### **Key Benefits**

- Prevent scaling in downstream RO and avoid complication and expense of using antiscalants
- Prevent scaling in downstream process by removing or reducing hardness and or bicarbonate alkalinity
- Protect RO and/or UF by using strong acid cation resin softeners to also remove certain cationic polymers present from upstream coagulation systems.

#### **Typical Design**







DuPont Resin	Features		Best Used For
AmberLite™ IRC120 Na	SAC	Gel	General purpose softening resin for co-flow systems
AmberLite™ HPR1100 Na	SAC	Gel	Softening resin with excellent physical stability and low rinse profile. Compatible with all system technologies.
AmberLite™ IRC200 Na	SAC	Macro	Highest physical stability for harsh application such as hot process softeners and other systems involving appreciable oxidative potential or high temperatures. For co-flow systems.
AmberLite™ IRC 83 H	WAC	Macro	High-capacity dealkalization and softening resin with improved operating capacity demonstrated in high-TDS Na-form operation. For co-flow systems.
AmberLite™ HPR8300 H	WAC	Macro	High capacity dealkalization and softening resin with demonstrated improved operating capacity over other available WAC resins.  Compatible with all system technologies.
AmberLite™ HPR4100Cl	SBA	Gel	The go-to Type II SBA resin. Compatible with all system technologies.

### Demineralization with IX

**DuPont™ AmberLite™ Ion Exchange Resins** for demineralization are used to remove all cations, anions and large organic contaminants from feed water. IX demineralization consists of at least 2 resin beds: a hydrogen form strong acid cation resin followed by a hydroxide form strong base anion resin. A degassifier may be used between them to remove bicarbonate alkalinityc reducing anionic load. Weak acid cation and/or weak base anion resins may also be incorporated depending on level of hardness, TOC and alkalinity.

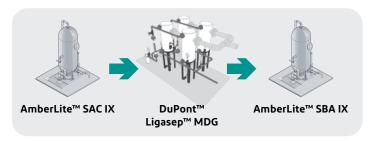
DuPont has over 80 years of experience manufacturing the widest range of industry-leading, reliable ion exchange resins from world-class manufacturing facilities.

#### **Key Features**

- Reduce key ionic contaminants down to microgram per liter concentrations required for steam generation.
- Save up to 40% in OPEX and receive up to 10x better water quality by using reverse flow beds over conventional co-flow systems.
- Further reduce cost by 25% using AmberPack™ and Upcore™ packed beds which use less regenerant and service water.



#### Typical Designs of IX demineralization systems





DuPont Resin	Features	Best Used For
AmberLite™ HPR1200 H	SAC	Designed to be the go-to high quality gel SAC resin. Compatible with all system technologies.
AmberLite™ HPR1300 H	SAC	Higher crosslinked DVB gel SAC resin for layered beds or where very low sodium leakage and conductivity is a chief concern. Compatible with all system technologies.
AmberLite™ HPR8300 H	WAC	High Capacity WAC resin for improved chemical efficiency. Compatible with all system technologies and bed configurations including layered beds.
AmberLite™ HPR9500	WBA	Good organic fouling resistance and high kinetics yielding good operating capacity even in low temperature operations. Offers a quick start up in a single bed or when paired with and OH-form SBA in layered bed systems. Compatible with all system technologies.
AmberLite™ HPR4200 Cl or OH	SBA	Designed to be the go-to high quality SBA resin. Good balance of capacity and strength and silica leakage. Compatible with all system technologies and bed configurations including layered beds.

### Demineralization with RO Brackish Water Elements

**Reverse Osmosis (RO) Elements** are pressure-driven purification products that separate ions, dissolved salts, and minerals using a semi-permeable membrane.

#### The FilmTec™ Prime RO Portfolio

The next generation of FilmTec™ brackish water RO (BWRO) elements were designed specifically for industrial utility water treatment.

#### **Key Benefits**

- **PROven:** Based on historical FilmTec<sup>™</sup> BW30 chemistry and over 40 years of manufacturing experience
- **PROgressive:** Continuous innovation to reach unparalleled performance, durability, and cleanability
- **PROductive:** Up to 20 % in energy savings and improved permeate quality by up to 60%
- PROficient: Outstanding performance and durability compared to alternative options
- **PROminent:** Global sustainability benefit of up to 85,000 Metric Tons of CO<sub>2</sub> emissions reduced per year



#### **Key Products**

FilmTec™ Prime RO	Salt Rejection (%)		Flow	Spacer		
8" Elements	Stabilized	Minimum	gpd (m³/d)	(mil)	Features	
FilmTec™ BW30 PRO-365	99.55	99.35	10,000 (38)	28	· High rejection & high-performance industry-standard	
FilmTec™ BW30 PRO-400	99.6	99.4	11,000 (42)	28	BWRO membrane elements  Consistent water quality and higher rejection and	
FilmTec™ BW30 PRO-400/34 (i)	99.6	99.4	11,000 (42)	34	flow than previous generation BW30 products	
FilmTec™ BW30XHR PRO-400/34 (i)	99.8	99.6	11,500 (43.5)	34-LDP	<ul> <li>Extra high rejection BWRO membrane elements</li> <li>Exceptional permeate quality including excellent silica, boron, nitrate, TOC and ammonium rejection</li> </ul>	
FilmTec™ BW30XHR PRO-440	99.8	99.6	12,650 (48)	28		

<sup>\*</sup>Please consult with your local DuPont representative about which Prime RO products are available in your region.

#### The FilmTec™ ECO RO Portfolio

FilmTec™ ECO Elements offer excellent rejection with significantly lower energy and reduced chemical consumption than traditional brackish water reverse osmosis elements

#### **Key Benefits**

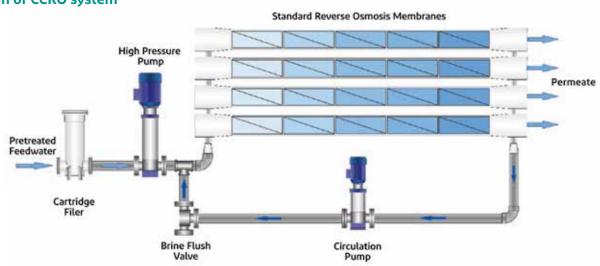
- Enhanced permeate water quality: exceptionally robust performance over a longer element life
- Lower energy consumption: up to 33% energy savings compared to the standard brackish water products
- **Improved operational efficiency:** up to 40% higher salt rejection and up to 40% savings in regeneration costs for downstream MB systems

FilmTec™ Prime RO	Salt Rejection (%)		Flow	Spacer	Features	
8" Elements	Stabilized	Minimum	gpd (m³/d)	(mil)	reatures	
FilmTec™ ECO PRO-400(i)	99.7	99.4	11,500 (43.5)	34	· High rejection, low energy	
FilmTec™ ECO PRO-440(i)	99.7	99.4	12,650 (48)	28	• Exellent element robustness and wide cleaning range	
FilmTec™ ECO PLATINUM-440(i)	99.7	99.4	12,650 (48)	28-LDP	Tough water quality (ECO PRO-400(i))	

### High Recovery Demineralization with CCRO

The patented **DesaliTec™ SOAR Closed Circuit Reverse Osmosis (CCRO)** system works by circulating water through a single stage of membrane elements until the desired recovery level is achieved instead of using complex traditional multi-stage methods. Brine is periodically replaced with fresh feedwater without stopping permeate flow. Recovery is flexible and can be set at the system control panel. The cross flow required for RO membrane operation is controlled with an internal circulation pump. Frequent and complete brine flushing prevents scale precipitation and disrupts biofouling, making very high recovery rates possible even with mineral-laden or contaminated feedwaters.

#### **Design of CCRO system**



#### **Key Benefits**

- **Flexibility** DesaliTec<sup>™</sup> SOAR CCRO systems automatically adapt to changing feedwater and allow the operator to modify recovery, cross flow, and flux in real time.
- Reliability DesaliTec<sup>™</sup> SOAR CCRO systems naturally mitigate
  the fouling and scaling that typically plagues reverse osmosis
  systems. Automated operation with online monitoring provides
  additional protection.
- Maximum Recovery DesaliTec<sup>™</sup> SOAR CCRO systems come with an industry-leading maximum recovery, operating at up to 98% recovery, allowing you to achieve your sustainability goals.
- Energy Savings DesaliTec<sup>™</sup> SOAR CCRO systems apply the optimal pressure to maintain constant permeate flow, reducing the average energy consumption by up to 35%.
- **Return On Investment** DesaliTec<sup>™</sup> SOAR CCRO systems minimize the largest cost associated with reverse osmosis system operation, wastewater disposal, which can be reduced by 50% to 75%.

FilmTec™ SOAR RO 8¨ elements	Area ft² (m²)	Features
FilmTec™ SOAR 3000	400 (37)	Lowest energy (lowest pressure)
FilmTec™SOAR 4000	400 (37)	Low energy, high fouling resistance
FilmTec™ SOAR 5000	400 (37)	Great rejection, medium pressure, highest fouling resistance
FilmTec™ SOAR 6000	440 (41)	High rejection (medium pressure)
FilmTec™ SOAR 7000	440 (41)	Highest rejection (highest pressure)

### **Degasification with Hollow Fiber Membranes**

**The DuPont™ Ligasep™ Degasification Modules** product line is a hollow-fiber-based technology that enables the removal of dissolved gases from water by physical means. These modules can be installed in-line with the water treatment system, ensuring efficient degasification to achieve even ppb levels (parts-per-billion) of dissolved gasses for a wide range of flow rates in water treatment applications, without chemicals.

When industrial equipment is in contact with water used in a process -steam production for example- or as an ingredient, dissolved oxygen and carbon dioxide might cause corrosion or might affect production quality. This can impact both light and heavy industries, such as **power generation**, **chemical and petrochemical industries**, food & beverage or even hydrogen production facilities.

#### Key Benefits vs. Chemicals or Stripping Towers

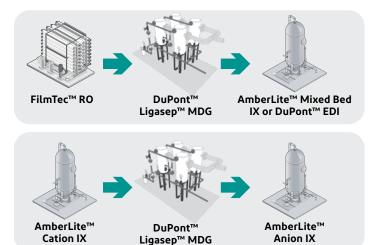
- Chemical-free operation
- Compared to towers: lower footprint, lower weight, and modular designs
- Highly protected water: no chemical residuals, no contact with air
- Flexibility and robustness

### Key Benefits vs. other Membrane Degasifiers

- Remove oxygen in vacuum-only mode (no need for nitrogen gas)
- Reduced water transport through the membrane



#### Typical Designs for CO<sub>2</sub> Removal



#### Typical Designs for O<sub>2</sub> Removal



Removing oxygen by Ligasep™ in boiler make-up lines may accelerate system readiness and boiler start-up time.

Ligasep™ Product	Maximum water flow per module	Application			
Ligasep™ LDM-040-LS	Up to 11 m³/h	Preferred for the removal of low solubility gases			
Ligasep™ LDM-120-LS	Up to 50 m³/h	(O <sub>2</sub> and CH <sub>4</sub> )			
Ligasep™ LDM-040-HS	Up to 11 m³/h	Preferred for the removal of high solubility gases			
Ligasep™ LDM-120-HS	Up to 50 m³/h	$(CO_2, H_2S, and NH_3).$			

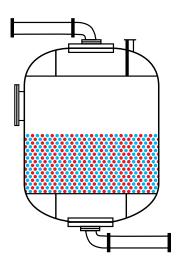
### Polishing with IX

**DuPont™ AmberLite™ Mixed Bed (MB) Ion Exchange Resins** are the standard final polishing step for boiler make-up water and are a critical part of steam condensate treatment. MB polishers remove low ppm to ppb range contaminants but can also protect a system in the event of condenser leaks, thereby improving plant reliability.

DuPont offers a wide selection of polishing resins including premixed resins for non-regenerable systems. We have the world-leading ion exchange brands that offer superior strength and quality for high performance in working and polishing MB applications.

#### **Key Benefits**

- Great combination of trace contaminant removal, reliability, and cost effectiveness
- Great balance between performance, stability, efficiency, and lifetime, with uniform particle size resins that minimize pressure drop while optimizing separation for effective regeneration



#### DuPont™ AmberLite™ Resin Pairs for Mixed Bed

DuPont Resin	AmberLite™ HPR650 H	AmberLite™ HPR1300 H	AmberLite™ HPR1200 H	AmberLite™ HPR2800 H	AmberLite™ HPR252 H	AmberLite™ HPR2900 H
AmberLite™ HPR550 OH	0					
AmberLite™ HPR4700 OH		0	Α			
AmberLite™ HPR4200 OH		0	0			
AmberLite™ HPR4800 OH		0	0	O		
AmberLite™ HPR9000 OH	0			0	0	
AmberLite™ HPR900 OH		0				
AmberLite™ HPR9200 Cl		Α		Α		Α

O = Optimum, P = Promoted, A = Acceptable

#### DuPont™ AmberLite™ Pre-Mixed resins

DuPont Resin	Features	Best Used For
AmberLite™ MB9L H/OH	SAC/SBA	Non-regenerable, premixed resin characterized by a highly cationic exchange capacity. The light color enables visualization upon exhaustion. The reference mixed bed for electroerosion applications.
AmberLite™ MB20 H/OH	SAC/SBA	Premixed resin developed for the production of high-purity water in general-purpose polishing applications. The reference mixed bed for service deionization.
AmberLite™ MB6113 H/OH	SAC/SBA	Non-regenerable, premixed resin developed for the production of high-purity water.  A color indicator allows easy visualization of the exhaustion point of the resin. The reference mixed bed for the production of demineralized water in small cartridge systems.

### Polishing with Electrodeionization (EDI)

**DuPont™ Electrodeionization (EDI)** is a continuous and chemical-free process of removing ionized and ionizable species from the feedwater using DC power. DuPont™ EDI modules optimize performance, maintain continuous product quality and can produce up to 18 mega ohm-cm high purity water with high silica and boron removal.

The patented DuPont™ EDI module utilizes a unique, leak free, low maintenance spiral-wound design containing membrane and ion exchange resins sealed in a high-strength fiberglass-reinforced plastic (FRP) pressure vessel.

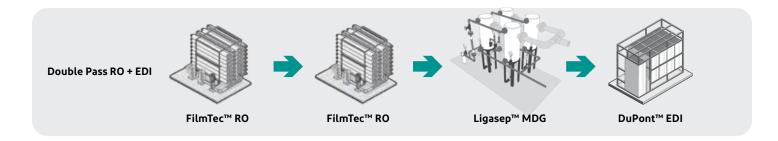
#### **DuPont™ EDI Advantages**

- Eliminates the need for hazardous regeneration/neutralization chemicals
- Is a clean technology, the only consumable is electricity
- Is a continuous process, there's no need for offline regeneration
- Smaller footprint than conventional DI
- Situational cost advantages



EDI is typically used to polish reverse osmosis (RO) permeate and to replace conventional mixed bed ion exchange by eliminating the need to store and handle hazardous chemicals used for resin regeneration and associated waste neutralization requirements.





DuPont™ EDI	Features
Model EDI-310	<ul> <li>Produce water up to 18 megaohm-cm for high-purity and ultra-pure industrial water applications.</li> <li>Allow system integrators to build systems that have both lower capital and operating costs when compared to conventional mixed bed ion exchange.</li> </ul>

### You can learn more about our products here

#### Just scan QR-code



Ion Exchange Resins for Industrial Water Treatment





Prime RO Webpage





DesaliTec™ SOAR CCRO





DuPont Ultrafiltration Capabilities





DuPont™ Ligasep™ Degasification Modules





Purity with simple sophistication. DuPont™ B-Free™ pre-treatment.





Water Solutions www.dupontwatersolutions.com

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