



WATER TREATMENT AT POWER PLANT

Fuel Pool Clean Up

Product Recommendations

Spent fuel is handled and stored under water for safety. Fuel pool clean-up systems are employed to ensure quality and clarity of this water. Dow provides special ion exchange resins in either single beds or mixed beds made from individual components or ready to use mixed beds that can be used for spent fuel pool clean-up systems. In certain cases reverse osmosis membranes can be used to upconcentrate the radioactive stream and thus reduce the waste amount to be treated.

TECHNOLOGY	PRODUCT	FEATURES AND RECOMMENDED USES	TYPE	MATRIX	MINIMUM TOTAL VOLUME CAPACITY (Eq/L)	IONIC FORM AS SHIPPED
ION EXCHANGE RESINS	INDIVIDUAL RESINS FOR CUSTOMIZED CHEMISTRY CONTROL ¹					
	AMBERLITE™ IRN97 H	High capacity 10% DVB uniform particle size cation resin for purification of fuel pool in VVER circuit #4 systems with good resistance to oxidative conditions.	SAC	GEL	2.10	H ⁺
	AMBERLITE™ IRN99 H	Premium 16% DVB uniform particle size cation resin with very high capacity and oxidative stability. High selectivity for cationic radioisotopes and high total capacity for long runs resulting in reduced waste and exposure. The high oxidative stability results in reduced fuel pool sulfate concentration and long resin life in this oxidative environment.	SAC	GEL	2.50	H ⁺
	AMBERLITE™ IRN9675 H	Nuclear grade macroporous cation resin designed to remove radioactive colloidal material in all nuclear applications. Often used as an overlay above a mixed bed.	SAC	MACRO	1.70	H ⁺
	AMBERLITE™ IRN78 OH	Premium high solids uniform particle size anion resin with very high capacity used for removal of anionic radioisotopes.	SBA	GEL	1.20	OH ⁻
	AMBERLITE™ IRN9766 OH	Macroporous anion resin designed to remove radioactive colloidal material in all nuclear applications. Often used as an overlay above a mixed bed or a cation resin.	SBA	MACRO	0.85	OH ⁻
	READY TO USE MIXED BEDS					
	AMBERLITE™ IRN160 H/OH	High capacity nuclear grade mixed bed composed of uniform particle size AMBERLITE™ IRN97 H and IRN78 OH Resins on a 1:1 equivalent basis. Designed to minimize separation of anion and cation during installation and transfer.	MB	GEL/GEL	2.10/1.20	H ⁺ /OH ⁻
	AMBERLITE™ IRN170 H/OH	Premium nuclear grade mixed bed composed of uniform particle size AMBERLITE™ IRN99 H and IRN78 OH Resins on a 1:1 equivalent basis. Offers maximum oxidative stability and high operating capacity to achieve low fuel pool sulfate concentration and long resin life.	MB	GEL/GEL	2.50/1.20	H ⁺ /OH ⁻
	AMBERLITE™ IRN9882	Nuclear grade macroporous mixed bed composed of 40% cation resin (12% DVB) and 60% AMBERLITE™ IRN9766 OH Resins on a volume basis. Offers high exchange kinetics and the ability to remove colloids for highest decontamination rates.	MB	MACRO/MACRO	1.65/0.85	H ⁺ /OH ⁻
REVERSE OSMOSIS	DOW FILMTEC™ Elements	Please contact your Dow representative for assistance.	N/A	N/A	N/A	N/A

Key:

¹ = Mixed beds using individual cation and anion must be prepared in-situ.

SBA = Strong Base Anion

SAC = Strong Acid Cation

MB = Mixed Bed

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WARNING: Oxidizing agents such as nitric acid attack organic ion exchange resins under certain conditions. This could lead to anything from slight resin degradation to a violent exothermic reaction (explosion). Before using strong oxidizing agents, consult sources knowledgeable in handling such materials.

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