

# E-Cell\* MK-3Pharm Stack

## Electrodeionization (EDI) Stacks for Pharmaceutical Applications

E-Cell \*MK-3Pharm is designed to:

- Provide Ultrapure Water for Pharmaceutical applications.
- Produce Mixed Bed quality water on a continuous basis.
- Require no caustic or acid for regeneration of mixed bed resin within the stack.
- Be leak free, guaranteed
- Eliminate brine injection and concentrate recirculation, simplifying system design.

### Description and Use

MK-3Pharm E-Cell stacks are electrodeionization (EDI) stacks which use electrical current to deionize and polish reverse osmosis (RO) permeate water. The product water for the MK-3Pharm is at greater than USP quality levels required in today's Pharmaceutical applications.

### Typical Application

- Pharmaceutical
- Laboratory

### Quality Assurance

- CE, UL & CSA marked
- Manufactured in a ISO 9001:2000 facility

MK-3Pharm Stack Specifications		
Nominal Flow	4.1 m <sup>3</sup> /hr	18.0 gpm
Flow Rate Range	1.6 – 4.5 m <sup>3</sup> /hr	7.0 – 20.0 gpm
Shipping Weight	92 kg	202 lbs
Dimensions (width x height x depth)	30 cm x 61 cm x 48 cm	12" x 24" x 19"

Typical Performance		
Product Quality		
Resistivity	> 10 MOhm-cm	
TOC (as C)	< 500 ppb	
Operating Parameters		
Recovery	Up to 95%	
Concentrate Flow	Counter current vs. Product Flow - Standard Co-current vs. Product Flow - when fed by double pass RO	
Voltage	0 – 300 VDC	
Amperage	0 – 5.2 ADC	
Inlet Pressure	4.1 – 6.9 bar	60 – 100 psi
Pressure Drop at Nominal Flow	1.4 – 2.4 bar	20 – 35 psi

Maximum Feed Water Specifications		
Feed Water - Total Exchangeable Anions (TEA as CaCO <sub>3</sub> )	<25 mg/l	<25 ppm
Feed Water - Conductivity, NaHCO <sub>3</sub> equivalent	< 43 µS/cm	< 43 µS/cm
Temperature	4.4 – 38°C	40 – 100°F
Total Hardness (as CaCO <sub>3</sub> )	< 1.0 mg/l	< 1.0 ppm
Silica (SiO <sub>2</sub> )	< 1.0 mg/l	< 1.0 ppm
Total Organic Carbon (TOC as C)	< 0.5 mg/l	< 0.5 ppm
Total Chlorine	< 0.05 mg/l	< 0.05 ppm

Actual performance may vary depending on site conditions. Reference E-Calc projection software to verify actual performance. Patents pending.