



Estimated Percent Rejection of Various Solutes by FilmTec™ Membranes

Introduction

In order to assist customers in estimating the rejection of FilmTec™ FT30 membranes, tests have been performed with a variety of solute compounds. The results of these tests are indicated as a % rejection for each compound listed in the tables below.

Actual system performance may vary from the listed data, particularly with changes in feed water concentration, pH and temperature. For this reason, these tables should be used as a quick screen. Pilot trials should be performed to determine actual rejection in a specific application.

Estimated Rejections

| Solute | MW | Rejection, % |
|-----------------------------------|-----|--------------|
| 1, 1, 1-Trichloroethane | 133 | 98 |
| 1, 2-Dibromoethane | 173 | 15 |
| 1, 2-Dichloroethane | 99 | 37 |
| 1, 2, 3-Trichlorobenzene | 181 | > 57 |
| 1, 2, 4-Trichlorobenzene | 181 | 96 |
| 1, 2, 4-Trimethylbenzene | 120 | 57 |
| 1, 2-Dichlorobenzene | 147 | 70 – 92 |
| 1, 3-Dichlorobenzene | 147 | 66 – 69 |
| 1, 4-Dichlorobenzene | 147 | 61 |
| 1-Chlorododecane | 204 | 87 |
| 1-Methylnaphthalene | 142 | 67 |
| 2, 2', 5, 5'-Tetrachlorobiphenyl | 290 | 46 |
| 2, 4, 6-Trichlorophenol | 197 | 100 |
| 2, 4-Dichlorophenol | 163 | 93 |
| 2, 6-Dimethylphenol | 122 | 92 |
| 2, 6-Di-Tert-Butyl-4-Methylphenol | 220 | 96 |
| 3, 8-Dimethylphenol | 122 | 92 |
| 3-Hydroxy-Capric Acid | 188 | > 98 |
| 3-Pentanone | 86 | 74 |
| 4-Ethylphenol | 122 | 84 |
| 4-Isopropylphenol | 136 | 84 |
| 5-Chlorouracil | 146 | 88 |
| Acetic Acid | 60 | 45 |
| Acetone | 58 | 70 |
| Aluminum Nitrate | 213 | 86 |
| Aluminum Sulfate | 342 | 89 |
| Aniline | 93 | 64 – 75 |
| Anthraquinone | 208 | 93 |
| Benzene | 78 | 19 |
| Benzoic Acid | 122 | 92 |

| Solute | MW | Rejection, % |
|--------------------------------|-----|--------------|
| Benzothiazole | 133 | 79 |
| Biphenyl | 154 | 91 |
| Bis (2-Ethylhexyl) Phthalate | 390 | 94 |
| Bromodichloromethane | 163 | 79 |
| Bromoform | 253 | > 67 |
| Cadmium Sulfate | 208 | 97 |
| Caffeine | 174 | 99 |
| Calcium Chloride | 111 | 99 |
| Calcium Nitrate | 164 | 95 |
| Carbon Tetrachloride | 153 | 98 |
| Cesium Chloride | 168 | 97 |
| Chlorinated Pesticide (traces) | | > 99 |
| Chlorobenzene | 112 | 0 – 50 |
| Chloroform | 119 | 71 – 90 |
| cis-1, 2-Dichloroethylene | 97 | 20 |
| Clofibric Acid | 214 | > 99 |
| Copper Sulfate | 160 | 99 |
| Cyclohexanone | 98 | 95 |
| Dibromochloromethane | 208 | 79 |
| e-Caprolactum | 113 | 85 |
| Ethanol | 46 | 38 – 70 |
| Ethyl Benzene | 106 | 71 |
| Formaldehyde | 30 | 35 |
| Furfural | 96 | 35 |
| Glucose | 180 | 98 – 99 |
| Glycine | 188 | 78 |
| Heptaldehyde | 114 | 100 |
| Humic Acid | | 98 |
| Hydrochloric Acid | 36 | 28 |
| Isophorone | 138 | 96 |

| Solute | MW | Rejection, % |
|------------------------|-----|--------------|
| Isopropanol | 60 | 90 |
| Lactic Acid (pH 2) | 90 | 94 |
| Lactic Acid (pH 5) | 90 | 99 |
| Magnesium Chloride | 95 | 99 |
| Magnesium Sulfate | 120 | > 99 |
| Manganese (II) Sulfate | 151 | 97 |
| Methanol | 32 | 25 |
| Methyl Ethyl Ketone | 72 | 73 |
| Methyl Isobutyl Ketone | 100 | 98 |
| Naphthalene | 128 | 80 |
| Nickel Chloride | 130 | 96 – 99 |
| Nickel Sulfate | 155 | 97 – 99 |
| o-Cresol | 108 | 84 |
| o-Xylene | 106 | 67 |
| p- & m-Xylene | 106 | 38 |
| Pentachlorophenol | 266 | > 86 |
| Phenol-80% | 94 | 65 |
| Phosphoric Acid | 96 | 94 |
| Quinoline | 129 | 97 |
| Silica | 60 | 98 |
| Sodium Acetate (1%) | 82 | 88 |
| Sodium Bicarbonate | 84 | 99 |
| Sodium Bromide | 103 | 96 |

| Solute | MW | Rejection, % |
|------------------------------|-----|--------------|
| Sodium Chloride | 58 | > 99 |
| Sodium Cyanide (pH 11) | 49 | 95 |
| Sodium Di-H Phosphate | 120 | 98 |
| Sodium Fluoride ¹ | 42 | 99 |
| Sodium Hydrogen Sulfate | 120 | 76 |
| Sodium Iodide | 150 | 97 |
| Sodium Mono-H Phosphate | 142 | 98 |
| Sodium Nitrate | 85 | 93 – 98 |
| Sodium Orthophosphate | 164 | 99 |
| Stearic Acid | 204 | 71 |
| Strontium Chloride | 158 | 96 |
| Succinic Acid | 118 | 35 |
| Sucrose | 342 | 99 |
| Sulfuric Acid | 98 | 84 |
| Tetrachloroethylene | 165 | 68 – 80 |
| Tin (II) Sulfate | 215 | 85 |
| Tributyl Phosphate | 266 | 49 |
| Trichloroethylene | 131 | 30 – 43 |
| Trimesic Acid | 210 | 96 |
| Urea | 60 | 70 |
| Zinc Chloride | 136 | 93 |
| Zinc Sulfate | 161 | 98 |

1. Fluoride rejection is strongly pH dependent (about 75% at pH 5, 50% at pH 4, 30% at pH 3.5 and 0% below pH 3).

Note: FilmTec™ FT30 membranes are available in a wide variety of spiral wound configurations.

Have a question? Contact us at:

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