EDLON® CUSTOM BONDED LINERS
FEP/PFA/PTFE/ETFE/ECTFE/PVDF

Benefit:
- Eliminates corrosion problems
- Superior bond of fluoropolymer to metal substrate
- High resistance to permeation
- Suitable for vacuum or agitated service over a wide range of temperature and chemical service applications
- Resists mechanical damage
- Non-stick surface provides excellent release properties

Description
Edlon, Inc. bonded liners can be fabricated from six different fluoropolymers: FEP, PFA, PTFE, ETFE, ECTFE, and PVDF. Virgin fluoropolymer sheet is laminated to a knit glass or polyester. Liners are fabricated using Edlon’s proprietary welding technologies and bonded into the tank or column using one of Edlon’s high strength proprietary bonding systems. These systems provide corrosion protection and resist permeation and delamination at temperatures up to 150°C (300°F) even in severe agitation or vacuum.

Applications
Bonded liners are available in a wide range of thicknesses from 0.060” to 0.120”. Three proprietary bonding systems are available: a flexible elastomeric, a low temperature and a high temperature system. Edlon will provide technical assistance to determine the proper material, thickness and bonding system for your application. We can install bonded liners in existing metal vessels or provide new equipment. Vessels are fabricated to ASME Code, API Code or even DOT specifications. Typical applications for Edlon Bonded Systems include:
- Mixing tanks
- Columns
- Storage tanks
- Vessel covers & heads
- Pipe sections
- Heat exchanger shells & heads
- Manway covers
- Transport tanks
- High purity applications

Bonded Liner Fabrication
- Liners are engineered for performance. Fusion butt-welded construction provides seams with tensile and elongation properties equal to those of the virgin fluoropolymer. Closure seams are double welded for added strength using state-of-the-art inert gas welding techniques.
- Vacuum thermoforming is used to reduce the number of welds on complex shapes.
- The fluoropolymer materials in the Edlon lining systems are backed with double knit glass, polyester or carbon fabric laminated directly onto the film. Each of our bonding systems is designed to resist chemical corrosion, permeation and vacuum in a wide range of services.

Features
- Fusion-welded construction
- Full range of application specific materials
- Wide range of thicknesses available
- Customized bonding systems to fit your process conditions
- Field repairable
**Edlon® Custom Bonded Liners**

**FEP/PFA/PTFE/ETFE/ECTFE/PVDF**

### Metal Preparation
- All corners must be radiused to 1/4”.
- All welds must be ground smooth and flush.
- Consult Edlon specification MSL-2002 for additional information on preparing metal surfaces for lining.

### Testing and Repair
- Bonded liners are repairable in the field; Edlon technicians can make repairs on-site or they can provide field repair training.

### Physical Properties (Material Only)

<table>
<thead>
<tr>
<th>Property</th>
<th>PTFE</th>
<th>FEP</th>
<th>PFA</th>
<th>ETFE</th>
<th>ECTFE</th>
<th>PVDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melt Viscosity (poise)</td>
<td>1x10^{-12}</td>
<td>8.5x10^{-12}</td>
<td>8x10^{-10}</td>
<td>1x10^{-8}</td>
<td>4x10^{-10}</td>
<td></td>
</tr>
<tr>
<td>Melting Point, °F (°C)</td>
<td>621 (327)</td>
<td>500 (260)</td>
<td>582 (306)</td>
<td>512 (267)</td>
<td>460 (238)</td>
<td>352 (178)</td>
</tr>
<tr>
<td>Tensile Strength, PSI</td>
<td>3000</td>
<td>3400</td>
<td>3600</td>
<td>6500</td>
<td>7000</td>
<td>4500</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.13-2.20</td>
<td>2.14-2.17</td>
<td>2.13-2.16</td>
<td>1.70-1.86</td>
<td>1.70</td>
<td>1.78</td>
</tr>
<tr>
<td>Flexural Modulus (PSI)</td>
<td>70,000</td>
<td>45,000</td>
<td>90,000</td>
<td>170,000</td>
<td>240,000</td>
<td>250,000</td>
</tr>
<tr>
<td>Crystallinity (%)</td>
<td>60-95</td>
<td>55</td>
<td>55</td>
<td>50-65</td>
<td>50</td>
<td>35-65</td>
</tr>
<tr>
<td>Coefficient of Thermal Expansion 10^{-5} in./in./°F</td>
<td>5.5</td>
<td>5.2</td>
<td>6.7</td>
<td>7.6</td>
<td>4.4</td>
<td>4.0-8.0</td>
</tr>
</tbody>
</table>

Source: DuPont Literature

### Design Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liner Thickness</td>
<td>0.060” thick to 0.120” thick</td>
</tr>
<tr>
<td>Max. Length (per section)</td>
<td>20 feet</td>
</tr>
<tr>
<td>Max. Vessel Diameter</td>
<td>12 feet</td>
</tr>
</tbody>
</table>

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