**Landfill**

The primary purpose of a Daelim Geomembrane liner in a landfill is to protect the groundwater from being contaminated. Daelim HDPE Geomembranes are resistant to most wastes and exceed the requirements of impermeability. Hazardous waste landfills require double liners and leachate collection / removal systems. A Daelim Geomembrane liner is a single liner with a leachate collection / removal system.

**Cap and Closures**

Daelim HDPE Geomembranes are used in landfill caps to prevent fluid flow into the landfill, thereby reducing or eliminating the generation of waste liquid after filling the landfill. The cap is also designed to trap and properly contain any gases generated by the decomposition of organic waste. Another advantage is that the completed cap allows for efficient reclamation and restoration of the land. Additionally, it may be possible to expand the landfill in the future, thereby enhancing the landfill’s capacity.

**Pond Liners**

The clean water act has required most publicly operated waste water treatment plants to install lagoon liner systems to prevent contaminants from entering groundwater sources or streams. In addition, the use of Daelim Geomembrane liners in possibly waste water treatment plants to prevent toxic waste from entering the water supply by preventing seepage loss. Pond liners can also be used in applications such as golf courses, amusement parks, resorts, agriculture and aquaculture.

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**Geomembrane Application**

<table>
<thead>
<tr>
<th>Application</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Landfill</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Landfill Diagram" /></td>
</tr>
<tr>
<td><strong>Cap and Closures</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Cap and Closures Diagram" /></td>
</tr>
<tr>
<td><strong>Pond Liners</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Pond Liners Diagram" /></td>
</tr>
<tr>
<td><strong>Mining</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Mining Diagram" /></td>
</tr>
<tr>
<td><strong>Secondary Containment</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Secondary Containment Diagram" /></td>
</tr>
<tr>
<td><strong>Canal Liners</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Canal Liners Diagram" /></td>
</tr>
</tbody>
</table>

**Secondary Containment**

Tank farms are lined to prevent groundwater contamination in the event of a chemical spill. The secondary containment system can be placed on concrete or directly on the ground. These liner systems for secondary containment can be very sophisticated utilizing the slurry trench method of speciosis metal construction using chemical solutions have resulted in low cost extraction from low grade ores. The use of flexible Daelim Geomembrane liners prevents the contamination of the environment by protecting the groundwater by these chemical solutions.

**Canal Liners**

Daelim HDPE Geomembranes are viable alternatives to concrete and compacted earth for lining canals to reduce seepage. Daelim HDPE Geomembrane can be used as an equivalent method to repair existing deteriorated concrete linings.
Overview of Geomembrane Field Seams

<table>
<thead>
<tr>
<th>Method</th>
<th>Seam Configuration</th>
<th>Typical Speed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUSION SEAM</td>
<td>Single Hot Wedge</td>
<td>90 m/hr</td>
<td>- Built in non-destructive test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Cannot be used for close details.</td>
</tr>
<tr>
<td></td>
<td>Double Hot Wedge</td>
<td>30 m/hr</td>
<td>- No bonding necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Consistency of “squeeze-out” is a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>good indication of seam quality.</td>
</tr>
<tr>
<td>EXTRUSION SEAM</td>
<td>Fillet-Type</td>
<td></td>
<td>- Upper and lower sheets must be</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Upper sheet must be beveled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Extrude must be of the same</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Routinely used for difficult details</td>
</tr>
</tbody>
</table>

Nondestructive Testing on Geomembrane Seam

Vacuum Test
- Vacuum Test: 0.15 mm/cm²
- Vacuum Duration: 10 seconds
- Vacuum Pressure: 0.35 kg/cm²
- Vacuum Duration: 10 seconds
- Vacuum Pressure: 0.35 kg/cm²

Air Pressure Test
- Max. Pressure: 2.5 kg/cm²
- Min. Pressure: 2.5 kg/cm²
- Test Duration: 3 minutes

Daelim Geomembranes

Since the 1970s, engineers have successfully designed with geomembranes. The use of geomembranes, also referred to as flexible membrane liners (FMLs), has increased as a result of growing concern over the contamination of valuable water resources.

Traditional porous liners, such as concrete, admix materials, clays and soils have proven questionable in the prevention of fluid migration to subsurface soils and groundwater. Currently, sewers through numerous types of liners, namely geomembranes, has been warranted. In fact, when tested in the same manner as clay, fluid permeability through a synthetic geomembrane has been immaterial.

An installation’s functional requirements will determine the type of geomembrane. Geomembranes are available in a variety of physical, mechanical and chemical resistance properties designed to meet the requirements of a wide range of applications. The products can be compounded for exposure to ultraviolet light, ozone and micro-organisms or soil. Different combinations of these properties exist in various geomembrane lining materials to cover a wide spectrum of geotechnical applications and designs.

Several methods are used to join the geomembrane materials in the factory and in the field. Each method has highly developed quality-controlled techniques that govern its manufacture and installation. New products and improved manufacturing techniques continue to be developed as the industry improves its technology.

Daelim, known as the leader among petrochemical companies in Korea with a couple of naptha crackers and related downstream resin plants, has an annual capacity of 7,200 ton of HDPE Geomembrane with thicknesses ranging from 1 to 2.5 mm and maximum width of 6.5 m. Daelim Geomembranes are produced by the flat die extrusion method under strict quality control. Internal technical staff and R&D center have given Daelim the unique ability to provide the customers with various kind of technical data which are essential for sound design and installation of the geomembrane.

Typical Properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Units</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Thickness</td>
<td>mm</td>
<td>1.0</td>
</tr>
<tr>
<td>Tear Strength (Fusion)</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Tear Strength (Extrusion)</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>Puncture Resistance</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Oxidative Induction Time(Min.)</td>
<td></td>
<td>600</td>
</tr>
<tr>
<td>Low Temperature Impact(MaP)</td>
<td></td>
<td>-70</td>
</tr>
<tr>
<td>Dimensional Stability (min/100°C)</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Environmental Stress Crack(MaP)</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Cost of Linear Thermal Exp(MaP)</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Permeability</td>
<td>cm²/s</td>
<td>1.20E-04</td>
</tr>
</tbody>
</table>

Seam Properties
- Sheet thickness
- Min. thickness

Product Specifications

<table>
<thead>
<tr>
<th>Thickness(mm)</th>
<th>Width(m)</th>
<th>Length(m)</th>
<th>Areal(mm)</th>
<th>Weight(kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>6.5</td>
<td>200</td>
<td>1300</td>
<td>1261</td>
</tr>
<tr>
<td>1.5</td>
<td>6.5</td>
<td>100</td>
<td>650</td>
<td>944</td>
</tr>
<tr>
<td>2.0</td>
<td>6.5</td>
<td>100</td>
<td>650</td>
<td>1261</td>
</tr>
<tr>
<td>2.5</td>
<td>6.5</td>
<td>100</td>
<td>650</td>
<td>1575</td>
</tr>
</tbody>
</table>

Note 1: These values can vary according to specification of the customer.
Note 2: Testing conducted under required conditions for the performance.