Canal®
Geocomposite for Canals & Water Containment Applications
The demand for water and the high costs of delivery requires implementation of proven conservation practices. Lining canals with HUESKER’s Canal³ geocomposite is the most effective step towards water conservation. With high seepage rates greater than 40% in unlined canals, lining with Canal³ reduces seepage losses and increases available water for delivery.

Canal³ may be comprised of polyester or polypropylene nonwovens depending upon project specific design parameters. Manufactured to a standard width of 17 feet (5.18 m) and a custom width up to 25 feet (7.6 m), Canal³ can be installed parallel or perpendicular to the centerline of the canal in order to minimize excess material in exposed, buried, or shotcreted applications.

Why Is Canal³ The Preferred Choice?

Canal³ Geocomposite.
When Every Drop Counts.

Puncture Resistance

Canal³ is comprised of a polyethylene membrane laminated between two nonwoven protection layers. The nonwovens can be designed for increased puncture protection if deemed necessary by site conditions, allowing onsite soils to be used as the subgrade material without the cost of placing an expensive bedding material or placement of separate nonwoven layers.

Interface Friction

Lining an existing earthen canal typically requires reshaping the bottom and side slopes prior to installing the Canal³ geocomposite. The side slopes can range from relatively flat to very steep depending on site conditions and property boundaries. The bottom nonwoven on Canal³ provides a superior interface friction response with onsite soils which prevents Canal³ from sliding. The top nonwoven layer also allows for soil or shotcrete to be used as cover material even for 1.5 H: 1 V slopes.

BEFORE RESHAPING
PREPARED CANAL
CANAL³ INSTALLATION

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Canal lining installations require cleaning and reshaping of the canal prior to the liner installation. Typically, other liners call for a sand bedding layer or a nonwoven cushion above the reshaped canal to provide puncture protection for the liner. Canal³ is designed with a high puncture protective layer beneath and above the membrane liner, and can be placed directly on the existing reshaped soils eliminating the costs of placing a sand layer.

The following chart includes published ASTM D-4833 puncture index test values for typical canal liners. Recently, a thorough field assessment of various types of canals concluded, “Without question, liners with a protective barrier performed the best and have required no maintenance, while the performance on the liners without a protective barrier has varied significantly.” (Evaluation of Canal Lining Projects in the Lower Rio Grande Valley of Texas, Karimov, Leigh, Fipps, P.E., 2009.)

Canal³ provides superior puncture properties for various site conditions from smooth to rough subgrades and is available in several styles. Irrigation districts and contractors agree that the ease of installing Canal³ over other liners is not only cost effective but also reduces installation time by using our wider width materials. Installations of Canal³ can be performed by a subcontractor or by irrigation personnel with minimal instructions from a HUESKER technical representative. The following are recommendations for the proper selection of the Canal³ products for various site conditions.

<table>
<thead>
<tr>
<th>Material</th>
<th>Subgrade</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Smooth</td>
<td>Moderate</td>
</tr>
<tr>
<td>Canal³ 4-20-4</td>
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<td></td>
</tr>
<tr>
<td>Canal³ 8-20-8</td>
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<td>✓</td>
</tr>
<tr>
<td>Canal³ 12-30-12</td>
<td>✓</td>
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</tbody>
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**Proven Performance.**

In order to achieve a successful installation, the first step is to deliver materials safely to the site. Each roll of Canal³ is wrapped with heavy duty plastic for protection during shipment along with two lifting straps for ease of unloading at the jobsite. Canal³ is typically shipped to the customer on flatbed trucks which allows easy unloading with slings or a lifting bar.

To aid in the deployment process, HUESKER supplies an installation guide which provides a detailed overview for installing Canal³. Canal³ can be installed perpendicular or parallel to the centerline depending on the size of the canal and its alignment. Details of the typical anchoring methods are included in the Installation Manual for specific configurations of side slopes.

Recommended seaming methods include using a hot melt adhesive, standard wedge welding, or a combination of both. Laboratory test results are available for each of these methods of seaming.

When mechanical fastening is required, Canal³ is easily attached to concrete structures by using batten strips which are anchored into the concrete using expansion anchors.

HUESKER’s Canal³ composite has been installed worldwide in various applications with successful results, and continues to be the designers first choice for canal lining applications. In today’s water conservation environment, eliminating costly seepage is a priority to ensure that every drop counts today and for future generations.

For more information on Canal³, call HUESKER at (800) 942-9418 or visit our website at www.HUESKER.com.
Case Study

In 2004, after years of concrete repairs, and high seepage rates, Hidalgo County Irrigation District No. 2 located in San Juan, Texas decided to rehabilitate their Lateral “A” canal. The 7.26-mile lateral was drained, and cleaned of loose debris, as well as cracks filled prior to the installation of Canal® 8-20-8 geocomposite above the existing concrete canal. Approximately 150,000 ft² of Canal® were supplied in standard and custom roll widths to reduce waste along the entire reach of the canal. The Contractor employed a modified shotcreting method for placing the 3-inches of shotcrete above the Canal® which resulted in placing over 125 yd³/day. Incorporating the Canal® above the existing concrete canal with the shotcrete above provides a “secondary” containment layer beneath the shotcrete layer extending the life of the canal beyond 50 years, according to the 10-year Study written by the Bureau of Reclamation.

Project: Rehabilitation of Lateral “A” Canal
Location: San Juan, Texas
Owner: Hidalgo County Irrigation District No.2
Contractor: McAllen Construction
Material: Canal® 8-20-8

Case Study

In 2007, the Porter Canal owned by the New Sweden Irrigation District located in Idaho Falls, Idaho was reshaped and lined with Canal® 12-30-12 by a commercial developer due to seepage onto a proposed commercial subdivision. The project consisted of reshaping 1,489 linear feet of the Porter Canal and installing 107,500 ft² of Canal® geocomposite liner by HK Contractors, Inc. The custom roll size of 25 feet wide x 300 feet long reduced the number of seams and expedited the installation process. The entire project took approximately 2 weeks, 1 week to reshape the existing canal, 4 days to install the Canal®, and another 3 days to seam and attach to a bridge structure. After construction, the Developer built on the now dry parcel adjacent to the canal.

Project: Lining of Porter Canal
Location: Idaho Falls, Idaho
Owner: New Sweden Irrigation District
Contractor: HK Contractors, Inc.
Material: Canal® 12-30-12

Canal® is a lining solution for irrigation canals and other water containment applications. The top and bottom of the nonwovens not only provide increased puncture protection, but also increased interface friction. Canal® is neither affected by changing temperatures or frost which typically cause cracks in concrete lining solutions or by animals which often cause damage to membrane liners. This innovative canal liner can be installed in exposed or buried applications. Shotcrete can also be applied onto Canal® for additional protection from vandalism and ultraviolet light.

For more information about the application of Canal®, please contact us.
Canal™ is a registered trademark of HUESKER, Inc.

HUESKER Synthetic is certified to ISO 9001, ISO 14001 and ISO 50001.