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## New and Noteworthy: Mirafi® 500X and 600X

As the COVID-19 pandemic continues to create business disruptions, our priority is to minimize these disruptions while protecting the health and safety of our employees. Unfortunately, shutdowns in manufacturing, shipping and transportation in various areas of the world have created significant challenges in the manufacturing supply chain. To that end, the global inventory position on slit tape products is very low and disruptions are expected.

**Mirafi® 500X and 600X** are the primary slit tape geotextiles supplied by TenCate Geosynthetics that will be disrupted by the COVID-19 pandemic. We understand that these products are still on some State DOT's standard specifications and Approved Products Lists (APL's). Supply of these materials could possibly be interrupted within the next 4-6 weeks. We understand this may cause significant disruption for many DOT projects. This situation is industry wide and not unique to TenCate Geosynthetics. Fortunately, there are options to minimize the effects of the disruption.

TenCate Geosynthetics no longer recommends using slit tape geotextiles in civil applications. We understand there are long standing specifications that are the driving force for the continued use of slit tape geotextiles like **Mirafi® 500X and 600X**. Many are specifications that were developed many years ago. The industry has developed new materials and geotextile technology has advanced significantly since the arrival of slit tape geotextiles over 40 years ago and alternate materials are readily available that will offer equivalent or superior performance to slit tape geotextiles. Where slit tape geotextiles are still being specified, TenCate Geosynthetics is committed to providing support to offer alternate materials that will be deemed acceptable to the Agency, Owner and Engineer.

The primary application where slit tape geotextiles are used is for separation. To that end, we offer the following alternates to **Mirafi® 500X and 600X**-

**Mirafi® 500X** possible substitution  **Mirafi® 140N**

**Mirafi® 600X** possible substitution  **Mirafi® 160N or 180N**

Mirafi® 140N, 160N and 180N are needle-punched nonwoven geotextiles composed of polypropylene fibers. See below for more detailed information on why these are suitable alternatives.

- For projects that have specified **Mirafi® 500X** as a **Separation Geotextile**, TenCate Geosynthetics **Mirafi® 140N** can be considered as a functional equivalent. Both Mirafi® 500X and 140N meet the minimum requirements for Class 3 Separation per AASHTO M288-17 *Standard Specification for Geosynthetic Specification for Highway Applications*.

- For projects that have specified **Mirafi® 600X** as a **Separation Geotextile**, TenCate Geosynthetics **Mirafi® 180N** or **Mirafi® 160N** can be considered as a functional equivalent. Mirafi® 600X meets the minimum requirements for Class 1 and Class 2 Separation applications per AASHTO M288-17 *Standard Specification for Geosynthetic Specification for Highway Applications*. **Mirafi® 180N** meets the Class 1 requirements for Separation per M288 and **Mirafi® 160N** meets the Class 2 requirements for Separation per M288.

In addition to meeting the minimum requirements for Separation per AASHTO M-288-17, **Mirafi® 140N, 160N and 180N** also meet the minimum requirements for Class 1, 2 and 3 Subsurface Drainage, 500X and 600X do not meet the requirements for drainage. For this reason, TenCate Geosynthetics no longer recommends using a slit tape geotextile in applications where moisture intrusion is expected at any time during the service life of the material. In geotechnical applications, moisture is always a possibility and therefore it is recommended to use a nonwoven geotextile in lieu of a slit tape material in separation applications.

Many State DOT's have already moved away from slit tape geotextiles. There have also been various studies on the performance of geotextiles in Separation applications. Some of these are referenced below:

- Kansas DOT Standard Specification – Section 1710 Geosynthetics, 1710.2(5) Woven geotextiles with slit-tape or slit-film filaments in both the machine direction (MD of warp) and the cross-machine direction (CD, weft or fill) are prohibited.
- Hossain, M., Hoppe, E., Moruza, A., and Weaver, C., Use of Geosynthetics for Separation and Stabilization in Low-Volume Roadways, Virginia Transportation Research Council, 2019.
  - Table 4. Proposed Guidelines for Use of Roadway Geosynthetics – Subgrade Separation: Nonwoven geotextile only, AASHTO M288 Class 2, Minimum Permittivity  $0.1 \text{ sec}^{-1}$ , Max. AOS 0.212 mm.
- Holtz, R., and Page, M., Performance of Geotextile Separators, WSDOT, 1991.
  - Section 7.3 Recommendations for Changes to WSDOT Specifications – “The test results indicate that the degree of blinding and clogging of a nonwoven geotextile over a clayey silt subgrade is less than that of a woven slit film geotextile. Based on these results it is recommended that current WSDOT specifications require that a nonwoven geotextile which meets the current strength criteria be used where the subgrade consists of clayey silt or sandy silt.”

There are also many existing specifications for geotextiles classified as Stabilization. Standard Specifications utilizing slit tape geotextiles for stabilization should be updated to incorporate high-modulus woven geotextiles. While, Mirafi® 140N, 160N and 180N do meet the minimum requirements of Class 1, 2 and 3 for Stabilization per AASHTO M288-17, this is based on survivability of the geotextile during installation and not necessarily performance. Stabilization in M288 is described in Section 8.4.1 as “This specification is applicable to the use of a geotextile in wet, saturated conditions to provide the coincident functions of separation and filtration. In some installations, the geotextile can also provide the function of reinforcement. Stabilization is applicable to the pavement structures constructed over soils with a California Bearing Ratio between 1 and 3.” Because, by definition, stabilization is the combination of separation, filtration

and reinforcement, TenCate Geosynthetics does not recommend slit tape geotextiles for stabilization applications due to their poor hydraulic properties and relatively low strength. For soft subgrade stabilization applications many performance requirements must be considered when specifying a material. TenCate Geosynthetics recommends incorporating a high-modulus woven geotextile for stabilization applications.

We apologize for the potential disruption of construction projects but also see this as an opportunity to update long standing specifications. TenCate Geosynthetics would appreciate the opportunity to review your specifications with you and offer insight on current geosynthetic technology. We look forward to the opportunity to work with you.

Links:

[Higher permittivity geotextiles](#)

If you have any questions, please do not hesitate to contact us.

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