

## The importance of the choice of the products

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**ABSTRACT:** The design of any new project shall include parameters such as, of course, the nature of the product to contain but also the role of the lining system, the features of the site (including the climatic conditions and sun exposure), the geometry, the way installation will be performed and the conditions in use, to adequately select the geosynthetics. It is only by adequately addressing all these points that one is able to choose the appropriate products (geomembranes, geotextiles or geocomposites, ballasting materials, etc).

Based on this analysis, the choice of the most adapted geomembrane will limit the risk of damages due to thermic variations. In fact, the level of expansion/contraction under variation of temperature depends of the nature of the geomembrane, its surface structure, its color and, of course, is the inclusion of a reinforcement or not. The selected geomembrane will impact by these features the potential apparition of wrinkles or bridging or not . As an example, where a black homogenous HDPE may exhibit a significant number of wrinkles, a white reinforced PVC will not exhibit dimensional variations. The choice of the appropriate geomembrane is thus of the primary importance.

When it is mandatory, for example in relation with chemical resistance to use a geomembrane which nature will lead to important thermic variations, it is necessary to find solutions to limit the apparition of disturbances during installation as during the in use period. These solutions can be found with the use of surface treatment (structure or clear colors), by thermic protection or by specific methods of backfilling taking into account the risk of daily temperature variations.

Once the geomembrane has been selected, it is important for each project to estimate the risk of damages that may result from thermic variation. For most projects, this is of no importance if there is no mechanical stressing of the geomembrane.

As an example, if the site presents high risks of climatic variations or wind, it can be proposed by the installer to realize anchorages or to ballast partially or totally the geomembrane. These measures have to be done during the installation in order to avoid any tension on the product which may create disturbances.

In conclusion, it is necessary to choose the right geomembrane for each project. In case the geomembrane will experience problems due to thermic variation and damages appear, various solutions can be found to limit the impacts.