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INTERPRETATION OF WASTE LANDFILL APPLICATION FOR GEO-MEMBRANES WITH STRESS CRACK RESISTANCE AFTER SIMULATED INSTALLATION DAMAGE TEST

The main applications of geomembranes (GMs) include their use as liners for liquid or leachate ponds or as part of composite barrier systems for waste landfills. Also, it is well known that polymeric materials, like geomembranes, may degrade and their properties may change over time. Stress cracking is likely to have the greatest impact on the actual service life of HDPE GM and occurs in a brittle manner with little or no elongation near to the crack surface. The application of a large external stress or loading on a polymer will result in a decrease in its useful lifetime, primarily via physical creep, although it is possible that chemical degradation mechanisms may also be enhanced. Little has been reported regarding the effect of stress on the degradation of HDPE geomembranes. The installation may represent the hardest stress on a geo-synthetic during its service life. Over the last years, numerous field studies regarding the installation survivability of geo-synthetics have been performed. They have shown that, in addition to the type of geo-synthetic, the level of damage will depend on weight, type and number of passes of the construction and compaction equipment, the graduation, angularity and condition of fill and lift thickness. Durability of geomembrane is gaining increasing attention day by day because of new engineering and environmental applications of geo-membranes. The resistance of geomembranes to installation damage is a great concern though sufficient investigated data is not available. Though laboratory simulation of installation damage is a way to have accelerated results, it requires correlation with the actual field installation. This paper presents findings regarding changes of mechanical properties on laboratory installation damage; tensile behaviour at different notch depth and stress cracking behaviour for notched and damaged geo-membranes.

Biography

HanYong Jeon is a Geosynthetics/Technical Organic Materials Researcher and he was the 32nd President of Korean Fiber Society (2014~2015). He has published more than 895 proceedings in domestic and international conferences. He wrote 21 texts including 'Geosynthetics' and also published 154 papers in domestic and international journals. He has received awards of Marquis Who's Who-Science and Engineering in 2003~2017 and "Top 100 Scientists in the World" of 2005/2011/2013 by IBC (International Biographical Centre, UK). Also, he got the 33rd Academy Award of Korean Fiber Society in 2006 and "Excellent Paper Award of 2012" by The Korean Federation of Science and Technology Societies.

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