enka®solutions

TECHNOTE

ENKAGRID® MAX 40 – BIAXIAL GEOGRIDS FOR SUB-BASE STABILIZATION

MECHANISMS OF GEOGRID SUB-BASE STABILIZATION AND THE RELEVANCE OF GRID SHAPES

Stabilization: The improvement of the mechanical properties of an unbound granular material by including one or more geosynthetic layers to reduce the deformation under load by minimizing soil particle movement.

Stabilization by geogrids involves the minimization of particle movement through the confinement / interlocking effect. This is achieved by particle restraint and, if the geogrid is placed on a subgrade which is not filter-stable opposite the sub-base, consideration should be given to the requirement of separation and filtration. In order for a geogrid to minimize particle movement, it must have adequate in-plane stiffness and good interaction with the sub-base material. Here, the aperture size relative to the aggregate particle size and grading are key characteristics.

Radial secant stiffness

The in-plane stiffness (at low elongations) of a geogrid is one of the most significant indicators of its performance, according to different research studies. Stiffness, or initial modulus, in kN/m describes the tensile behavior of the product at low strain values, and can be determined according to EN ISO 10319, or according to a modified EN ISO 10319 test created for hexagonal geogrids (ETA 12/0530).

Tests on EnkaGrid MAX 40 were carried out in 2017 at the independent laboratory of Kiwa GmbH. Figure 1 shows the radial secant stiffness (at 0.5% strain) values of EnkaGrid MAX 40 and compares these to radial secant stiffness values (at 0.5% strain) of the typical hexagonal geogrid range.

It is a misconception that good stabilization is only achieved by hexagonal geogrids: the initial modulus and the interlocking properties of stiff biaxial geogrids like EnkaGrid MAX are more than adequate to ensure excellent sub-base stabilization in road structures.

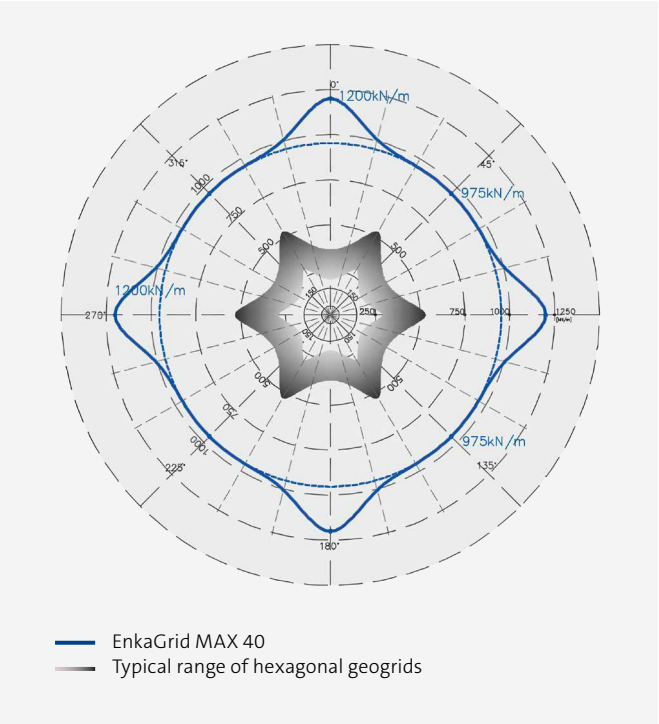

Figure 1
Radial secant stiffness at 0.5% elongation.
The radial stiffness values of EnkaGrid MAX 40 were taken from the Test Report No. 1.1/10360/0872.0.1-2017.

EnkaGrid MAX 40 values

Min. radial stiffness at 0.5% strain:	975 kN/m
Min. radial stiffness at 2.0% strain:	645 kN/m
Isotropy stiffness coefficient:	0.8 (-0.15 tolerance)

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