Model Specification
Tensar HX-AE™ Geocomposite Model Specification

1. The reinforcing element shall be grid and fabric geocomposite manufactured in accordance with a Quality Management System which complies with the requirements of EN ISO 9001:2015. If required by the Engineer, the Contractor shall provide evidence that the manufacturer's Quality Assurance System has been certified to conform with EN ISO 9001:2024 by a Conformity Assessment Body accredited by a nationally recognised accreditation body as recommended by the Department for Business, Energy and industrial Strategy (BEIS).
2. The reinforcing geocomposite shall consist of a stiff monolithic and multi-axial and multi-shaped paving grid thermally bonded to a paving heavy weight fabric at the grid nodes. The geocomposite shall work as a structural reinforcement for increasing fatigue life of an asphalt overlay. Thus, the reinforcing geocomposite should delay the occurrence of bottom-up mode of fatigue cracking.
3. The paving fabric shall be a non-woven needle punched geotextile manufactured from polypropylene which typically weight 0.130 kg/m^2.
4. The paving fabric shall have residual bitumen retention of 1.5 kg/m^2 mean value (+/- 0.40 kg/m^2), when tested in accordance with ASTM D6140. Note - EN 15381:2008 stipulates that:
   - Stress relief is a function which is provided by a bitumen saturated paving fabric, which when properly installed between the road surface and a new asphalt overlay, allows for slight differential movements between the two layers and thus provides stress relief, which delays or arrests crack propagation in the asphalt overlay.
   - An interlayer barrier is a function which is provided by using a paving fabric in conjunction with a bitumen layer, as a barrier to the ingress of water and thus prevent or delay the deterioration of the pavement.
   - Table 1 of EN 15381: 2008 refers to Annex C of the same document in relation to the bitumen retention characteristic required for the functions of stress relief and an interlayer barrier. As stated, the minimum bitumen retention required to assure installation integrity, has been formalised by industry experts in the AASHTO M288 specifications for geotextiles (fabrics) as 0.9kg/m^2.
5. The stiff monolithic reinforcing grid shall be manufactured from a polypropylene sheet, which is then punched and oriented. The resulting structure consists of continuous and non-continuous ribs forming three geometries- hexagon, trapezoid and triangle – and un-impeded suspended (lifted) hexagon.
6. The ribs of the reinforcing grid shall be of rectangular cross section in both the longitudinal and transverse directions. Rib Aspect Ratio, so a ratio of mid-rib height to the mid-rib width should be higher than 1.0 Thus , the reinforcing grid shall provide a lateral confinement of bitumen bound particles which is an effect of the mechanism of interlock by which the structure of the multi-axial and multi-shaped geogrid restrains the bitumen bound particles and they both interact under applied compaction and then traffic load.
7. The continuous parallel rib pitch, which is a distance measured between two parallel ribs, has the nominal value of 80mm mean value (+/-6mm).
8. The geocomposite performance should be assessed with a Four Point Beam bending test (4PB-PR) conducted at an independent research facility evidencing increase of the pavement fatigue life with the adopted shift factor (SF). Test should be conducted on the control samples and samples enhanced by geocomposite incorporating multi-axial and multi-shaped geogrid. Test should be performed in the controlled strain mode at min 5 levels of tested strains and at the temperature of testing of +20°C (68°F).
9. The shift factors (SF) determined at the strain level of 130microstrain, which typically occurs at the bottom of asphalt layers under medium traffic in newly constructed pavements should not be less than 2.0. It is also acceptable to determine the shift factor at the lower level of strain than 130microstrain, however then the value of shift factor evaluated in such a way must be proven as relatively higher.
10. The reinforcing element shall be non-biodegradable, inert to all chemicals naturally found in soils and shall have no solvents at ambient temperature. It shall not be susceptible to hydrolysis, shall be resistant to aqueous solutions of salts, acids and alkalis.

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