

E'GRID™ vs TriAx™ Geogrids

A product comparison

UK Advertising Standard Authority adjudication ADJ 4625, 20th May 2009, states:

"We noted we had not seen robust evidence to show that... Tensar TriAx™ geogrids outperformed either their own biaxial geogrids in all instances or the biaxial geogrids of their competitors."

(Full adjudication can be found at www.asa.org.uk)

Following the launch of Tensar TriAx™ geogrids and the claimed superior performance over their standard SS Biaxial geogrids, Wrekin and its partners felt compelled to investigate the performance of our own Biaxial E'Grid™ products directly against the new TriAx™ designs.

Results based on actual product testing, provide compelling evidence that established Biaxial E'Grid™ products actually outperform TriAx™ products for all of the following key product properties:
Radial Stiffness, Tensile Performance, Rib Cross-Section, Installation Damage.

Our findings confirm that BiAxial E'Grid™ 2020 is equal or greater in performance to TriAx™ TX160 and BiAxial E'Grid™ 3030 provides superior performance qualities in comparison with both TriAx™ TX160 & TX170, based on our testing for all four key product properties.

Our test results allow us to conclude:

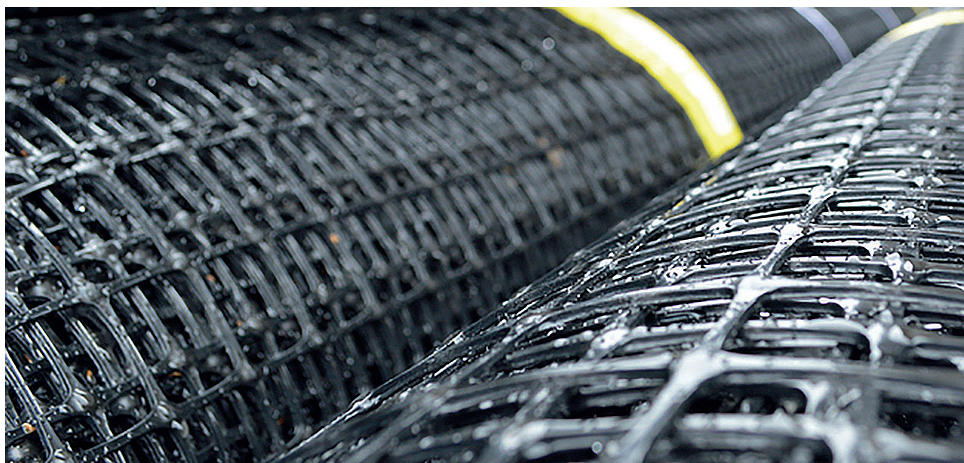
E'Grid™ geogrids are at the very least equal in performance to TriAx™ Geogrids.

E'Grid™ 2020 > TriAx™ TX160

E'Grid™ 3030 > TriAx™ TX170

Conclusions drawn directly from technical note titled 'The Radial Stiffness of E'Grid Biaxial Geogrids at 0.5% Strain', available upon request.

Continued over...



Page 1 of 2



All details and conclusions stated within this document are drawn directly from test results and reports supplied by Newgrids Limited. Full copies of the referenced Newgrids Limited reports are available upon request. All information stated is accurate to the best of Wrekin Products Ltd knowledge and current at the time of issue. Wrekin Products Ltd reserve the right to change and/or alter any of the information contained in this document without prior notice.

E'GRID™ vs TriAx™ Geogrids

... continued

Synopsys

Radial Stiffness - tested in accordance with the principles of ISO 10319, 2008

1. E'Grid™ 2020 tested stiffer than the TriAx™ TX160 specification on average.
2. E'Grid™ 3030 significantly exceeds the specifications of both TriAx™ TX 160 & TX170 at all points around 360°.
3. In terms of 'Radial Stiffness' E'Grid™ 2020 is a comparable equivalent to TriAx™ TX160.
4. In terms of 'Radial Stiffness' E'Grid™ 30 is superior in performance to both TriAx™ TX160 & TX170.

Conclusions drawn directly from technical note titled 'The Radial Stiffness of E'Grid Biaxial Geogrids at 0.5% Strain', available upon request.

Tensile Properties - tested in accordance with the principles of ISO 10319, 2008

1. Tests show that TriAx™ TX160 is significantly unbalanced, with variances between MD & CMD strengths and loads varying between 11 to 44% (equivalent E'Grid™ 2020 results gave a variance of only 5-9%).
2. Critical low-strain properties of the E'Grid™ 2020 are distinctly higher than TriAx™ TX160 in all but one result (minute difference). Overall results show E'Grid™ 2020 can be considered at the very least directly comparable to TriAx™ TX160.
3. Critical low-strain properties of the E'Grid™ 3030 are significantly higher in *all* counts when directly compared with TriAx™ Tx170.

Conclusions drawn directly from technical note titled 'The Tensile Properties of Biaxially-Stretched Geogrids', available upon request.

Cross-Sectional Stability - direct physical comparison

1. E'Grid™ 2020 and TriAx™ TX160 have similar rib heights and therefore they can be considered equally efficient at interlocking fill/aggregate.
2. E'Grid™ 3030 has greater rib height than both TriAx™ TX160 & Tx170 and therefore can be expected to provide greater 'interlock' with compacted fill/aggregate.
3. TriAx™ ribs are considerably narrower in comparison to E'Grid™, as a result they can be considered 'less stiff' and therefore less effective at resisting abutment forces.

Conclusions drawn directly from technical note titled 'Rib Cross-Sections of Biaxially-Stretched Geogrids', available upon request.

Installation Damage of Biaxially-Stretched Geogrid - tested in accordance with Annex D, BS 8006:2010 & ISO 10319

1. E'GRID™ 2020 & 3030 and TriAx™ Tx160 & TX170 samples were tested in 3 well-graded, crushed stone fills of 5mm, 60mm and 125mm maximum stone size. In all cases TriAx™ TX160 and TX170 suffered significantly more damage than E'GRID™ 2020 or 3030. In the 5mm fill the E'GRID™ products lost just 0.8% strength whilst the TriAx™ products lost 8.4% and 1.7% strength respectively. In the 60mm fill the losses were just 5.2% and 2.0% for the E'GRID™ products compared to 14.5% and 14.4% for the TriAx™ products.
2. E'Grid™ geogrids have a much more broad rib design. It can reasonably be concluded that the narrow ribs of the TriAx™ products are considerably more susceptible to on site and installation damage, which in turn directly impacts upon product performance and function in situ and is a factor that should be considered at the design stage.

Conclusions drawn directly from technical note titled 'The Radial Stiffness of E'Grid Biaxial Geogrids at 0.5% Strain', available upon request.

Conclusion

- What is TriAx™? Biaxial-stretched grid with triangular apertures.
- TriAx™ published properties are matched or beaten by E'Grid™
- TriAx™ conventional test results - TriAx™ is beaten by E'Grid™
- Confinement force - TriAx™ is matched or beaten by E'Grid™
- Installation damage - TriAx™ is more susceptible than E'Grid™
- **E'Grid™ geogrids are better engineering materials**



Page 2 of 2



All details and conclusions stated within this document are drawn directly from test results and reports supplied by Newgrids Limited. Full copies of the referenced Newgrids Limited reports are available upon request. All information stated is accurate to the best of Wrekin Products Ltd knowledge and current at the time of issue. Wrekin Products Ltd reserve the right to change and/or alter any of the information contained in this document without prior notice.