



Simply Excellent.

**Ground Reinforcement Systems made
of recycled Plastics**

Quality assurance

RAL-GZ 806

Agenda

- What is RAL?
- Why was it done?
- RAL classification for EcoGrid?
- What was tested and how?
- Results and certifications?

What is RAL?

- The letters RAL stand for the Quality Mark and seal of the RAL Institute. The RAL name and seal of quality is recognised in Germany and internationally as a symbol for superior quality products and services.
- In existence since 1925
- State Commission for Delivery Terms. The common aim was to clarify and standardize technical delivery conditions. Established quality requirements and their respective monitoring were needed for this purpose.
- The institute draws up rules and regulations, independently and in a solely responsible manner to assure quality standards.
- Importance in maintaining the quality assurance approach
- Clarity in labelling and a reliable marking of goods and services in the interest of the consumer.
- More detailed information on the internet at www.ral.de

Why was it done?

- No European specific quality testing for ground reinforcement systems
- Misleading/false claims by competitors within the industry.
- Need to prevent bad image of “plastic grids” due to failure of poorly designed “cheap” commodity plastic grids
- Group of “quality” suppliers pooled in Europe to create the this standard:

RAL Classification for EcoGrid

- GROUND REINFORCEMENT SYSTEMS
- RECYCLED PLASTICS CONTENT
- GROUPS I-IV

Group I areas used by pedestrians, cyclists, light motorcycles and designed for a load up to 15 kN * (equivalent to 30 t/m²)

Group II areas such as footpaths, pedestrian zones (pedestrian precincts) and comparable areas as well as parking facilities for cars and loads up to 125 kN * equivalent to 250 t/m²).

Group III areas such as paths, fire rescue paths **, roadside verges, parking facilities designed for all kind of road vehicles for load up to 250 kN * (equivalent to 500 t/m²).

Group IV areas used with high wheel loads, e. g. fire rescue paths, logistic areas, parking facilities for lorries and busses and loads up to 400 kN (equivalent to 800 t/m²).

RAL Classification for EcoGrid

- TESTING REGULATIONS FOR
 - NON-SEALED SYSTEMS
 - EROSION PROTECTION GRIDS
- SELF AND EXTERNAL QUALITY ASSURANCE SYSTEM
- NON-SEALING MEASURED BY RUN-OFF COEFFICIENT
- STANDARDS RESPECTED INCLUDE:
 - OECD GUIDELINES for testing of chemicals
 - DIN1072 and EN124 (Traffic- Roads and bridges, vehicles, pedestrian etc.)
 - ISO 9001 (Quality management system)
 - DIN 4102-1 (fire behavior)
 - DIN 4892-2 (weathering)
 - DIN 12061 (impact testing)
 - DIN 2039-1 (hardness)
 - DIN 15342/344/345/348 (recycled plastics)

RAL What was tested and how?

Height > 30mm (1.2")

Usability

- Mounting
- Compound
- Risk of Injury
- Winter Clearing
- Removeability
- Recycleability

Raw Material >25% recycled

Visual quality

Dimensions and Tolerances

Rupture safety (to -10C)

Pressure resistance:

- Surface
- Point Load
- Regular
- High load (group IV)

RAL What was tested and how?

Quality during aging and UV **Product marking for traceability**

- Names
- Production dates
- Recycling label
- Classification Groups I-IV

Flatness

Trafficability (no rutting etc.)

Dimensional stability over temperature range

Media resistance (salts, bases, oils, fats, fertilizers)

Warranty > 6 years

Results and Certifications

- BLOXX Passed group classification IV
- E50 Passed group classification IV
- E40 Passed group classification IV
- S50 Passed group classification IV