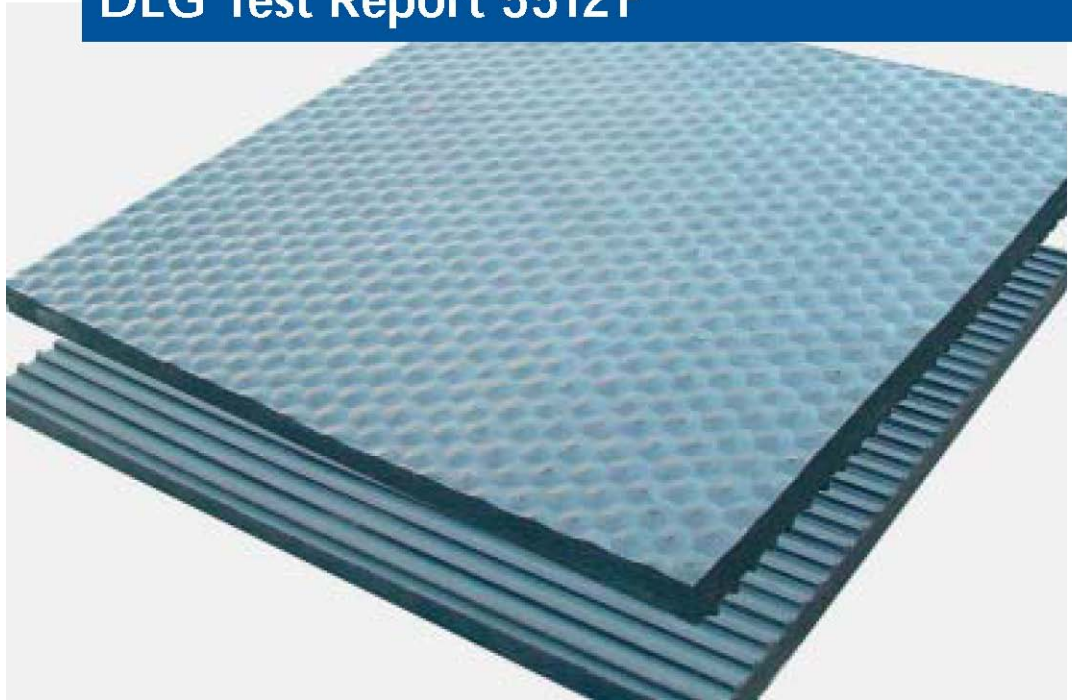


Rubber stal mat

Deformability and elasticity, Continuous tread load, Abrasion resistance, Acid resistance, Slip resistance

DLG Test Report 5512F



Description

Elastic floor cover for level concrete walking ways in cattle- and horse husbandry

black, deeply profiled rubber mat, 18 mm thick;
surface with a honeycomb structure;
under side with ridges
height and width of the ridges: 3 mm,
ridge distance: 6 mm;
installation as single mats and rolls.



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Test results and individual evaluations

Deformability and elasticity

In impression tests in new condition with a round steel foot (artificial cow's foot) having a diameter of 105 mm (contact area 75 cm², with a 5 mm wide ring at the periphery of the sole which projects 1 mm above the rest of the surface (carrying edge of the claw) and at a penetration force of 2,000 N (corresponding to approx. 200 kg), penetration depth was 2.2 mm. The surface pressure calculated based on these results is 26.67

N/cm².

Elasticity was measured after a continuous tread load test with a steel foot, which comprised 250,000 alternating loads of 5,000 N.

After the endurance test, the penetration depth of the steel foot remained 2.2 mm.

Evaluation

Deformability and elasticity –in new condition +
– after the continuous pressure test +

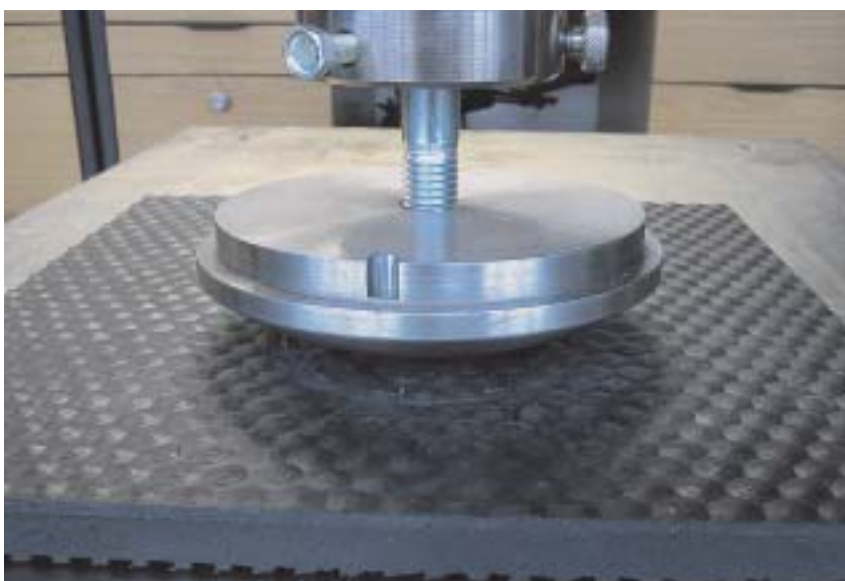
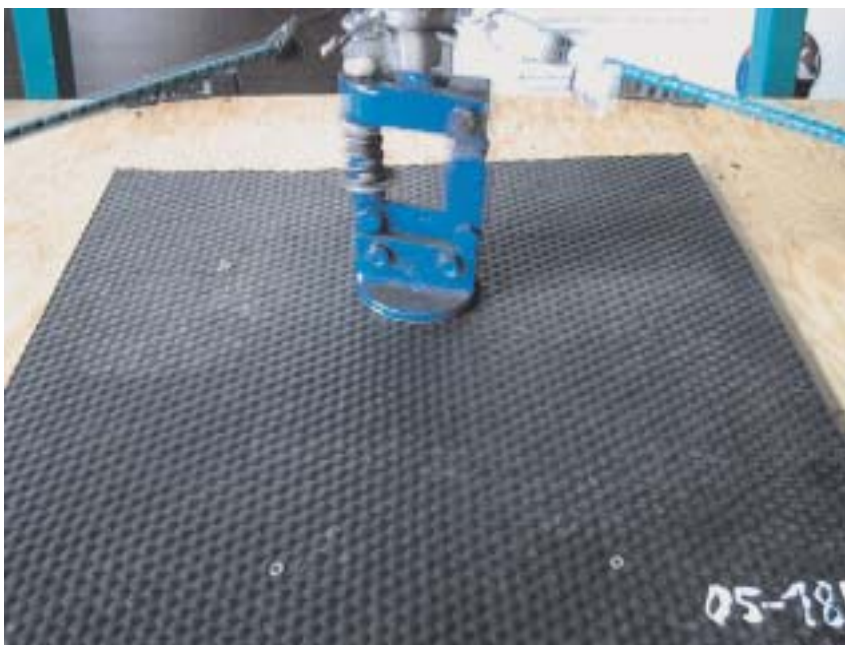


Figure 3: Measurement of deformability with a calotte

Continuous tread load test

After exposure to a continuous tread load exerted by a steel foot on a test stand (contact area 75 cm²), which comprised 100,000 alternating loads of 10,000 N (approximates to ca. 1,000 kg) and 250,000 alternating loads of 5,000 N (corresponding to approx. 500 kg), little wear (though no damage to the surface) was established. On the under side of the mat, the ridges show significant abrasion and little wear. Noticeable, lasting deformation was not found.

Evaluation

no noticeable lasting deformation ++
surface: little wear
under side of the mat (ridges): significant abrasion and little wear

Abrasion resistance

In a standardized abrasion test, the cover was rubbed with emery cloth (granulation: 280) at a pressure of 500 N (= 8.13 N/cm² surface pressure). After 10,000 double strokes, abrasion depth was approx. 2 mm. This corresponds to approximately 11% of the cover height. Of the rubbed surface (61.5 cm²), approximately 2.1 g were abraded.

Evaluation

Abrasion depth and abrasion indicate good abrasion resistance of the floor cover +

Acid resistance

An acid resistance test according to DIN 51958 with a listed disinfectant, feed acids (a mixture of formic acid, lactic acid, propionic acid, and citric acid) as well as ammonia solution (32%) and sulphurous acid (5-6% SO₂) did not cause any visual alterations or signs of swelling or destruction.

Evaluation

Acid resistance test:
no alterations to the cover +

Slip resistance

The measurements were carried out using the mobile Comfort Control footing safety test stand of the DLG Test Centre.

A loaded plastic foot made out of polyamide (diameter 105 mm, contact area approximately 70 cm² with a 3 mm wide ring at the periphery of the sole which projects 1 mm above the rest of the surface), was pulled over the test mat at a velocity of 20 mm/s. The registered tractive forces were correlated with the load weight and used to calculate the friction coefficient.

The measurement showed good slip resistance on the dry and wet cover.

The measured friction coefficients (μ) are above the minimum value of $\mu = 0.45$.

Evaluation

Slip resistance during slide tests on the dry and wet cover was good +



Figure 5: Test sample after the abrasion test

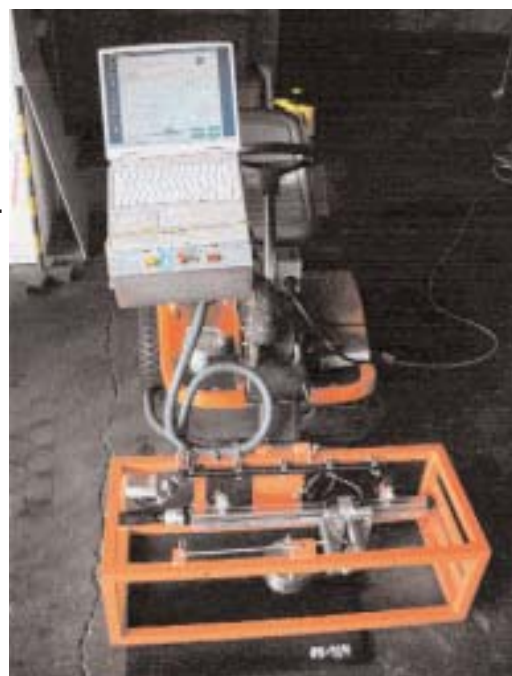


Figure 6: Measurement of slip resistance with DLG ComfortControl

The DLG FokusTest included technical measurements on test stands of the DLG Test Centre.

Abrasion- and slip resistance, deformability, and elasticity were examined. In addition, an acid test and a continuous tread load test were carried out.

Other criteria were not tested.

Project director

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