



Ani-mat Inc.

Animat walking way cover Interlock Flooring System

Deformability/Elasticity, Permanent tread load, Abrasion,
Slip resistance, Cleaning distance, Acid resistance

DLG Test Report 5956 F



Description

Black, profiled rubber mat

- ca. 20 mm tick,
- surface with a hammer stroke structure,
- under side with grooves,
 - height ca. 1 mm,
 - width ca. 4 mm,
- space between the grooves ca. 4 mm.
- Strip wise instalation.
- Shore A: 70.



Registering company

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Test results and detailed evaluations

Deformability and elasticity

In indentation test 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 over the rest of the surface (carrying edge of the claw)) and a penetration force of 2.000 N (corresponding to ca. 200 kg), penetration depth was 1.7 mm. This results in a calculated surface pressure of 26.7 N/cm².

Elasticity was measured after the rubber mat had been exposed to a permanent tread load exerted by the steel foot (250.000 alternating loads of 5.000 N).

After the endurance test, the penetration depth increased to 1.8 mm.

Evaluation*

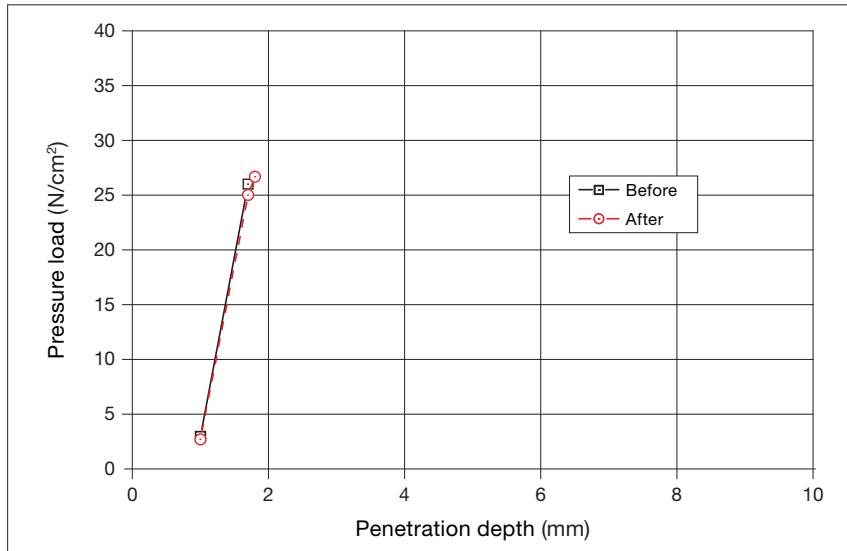
- in new condition +
- after the permanent pressure test +

Permanent tread load

After the rubber mat had been exposed to a permanent tread load exerted by 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 over the rest of the surface (carrying edge of the claw)) in test stand trials (250.000 alternating loads of 5.000 N (corresponding to ca. 500 kg), the rubber mat showed no appreciable wear on the surface and little wear on the grooves. Lasting deformation could not be observed.

Evaluation*

- surface no appreciable wear +
- grooves on the bottom little wear ○
- no lasting deformation ++



Picture 2:

Deformability as a function of surface pressure

Abrasion test

In a standardised abrasion test during which the surface was grinded with an emery cloth (granulation 280) and a grinding pressure of 500 N (= 8.1 N/cm² surface pressure), the abrasion depth after 10,000 cycles amounted to 2 mm, this corresponds to approximately 10 % of the rubber thickness. Of the ground surface (61.5 cm²) 10.4 grams were rubbed off.

Evaluation*

The minor abrasion depth and the slight grit implicate a good wear resistance of the rubber mat

+

Slip resistance

Evaluation*

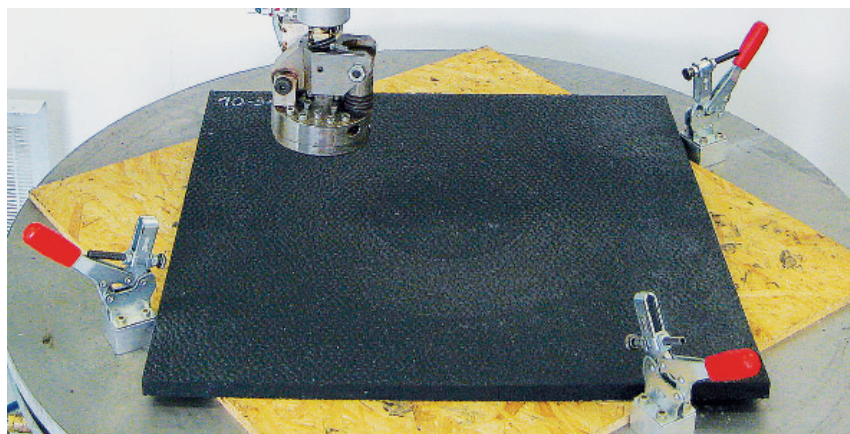
Good slip resistance on dry and wet rubber mat surface

+

The measurements were carried out with the ComfortControl test rig of the DLG test centre.

A loaded (10 kg) round plastic foot (105 mm diameter, with a contact area of 75 cm², 3 mm wide ring at the periphery of the ground) was pulled with a velocity of 20 mm/s across the mat.

The slide pulling tests showed a



Picture 3:

Permanent tread load test rig



good slip resistance on the dry or wet rubber surface in new condition. The measured friction coefficients (μ) all surpassed the minimal value of $\mu = 0.45$ which speaks for a good foothold.

Cleaning distance

Evaluation*

- minimum distance 5 cm with a flat jet nozzle + +
- minimum distance 50 cm with a coarse dirt remover ○

In test stand trials with a high pressure cleaner (approximately 145 bar, exposure period 1 minute) damage to the cover only occurred when a minimum distance of 50 cm (with a coarse dirt remover) and

5 cm (with a flat-jet nozzle) was not kept. For cleaning and disinfection of the floor cover, only the cleaning agents permitted by the manufacturer should be used.

Acid resistance

A permanent dipping test in accordance to DIN EN ISO 175:2000 (performance of synthetic material against liquid chemicals) was carried out. Test samples (size 50 x 50 mm) were complete dipped in different test liquids for 24 hours and 28 days (room temperature 20° Celsius). In the 28 days test the liquids were changed weekly. Before and after the dipping the weight, the dimensions and the shore hardness (shore A) of the test samples was measured. Additional a visual evaluation was done for

alterations like colour changing, swelling or destruction.

Evaluation

Because of the resistance against the used feed- and excrement acids and the used disinfection liquid the rubber mat seems to be well suited for the described use.

The rubber mat was resistant against the used test liquids.

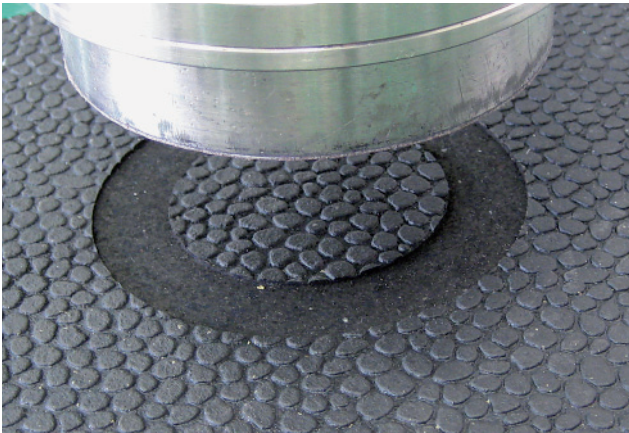
The rubber mat shows no appreciable changing +

Evaluation:
+ / ○ / – (+ = resistant, ○ = limited resistant, – = not resistant)

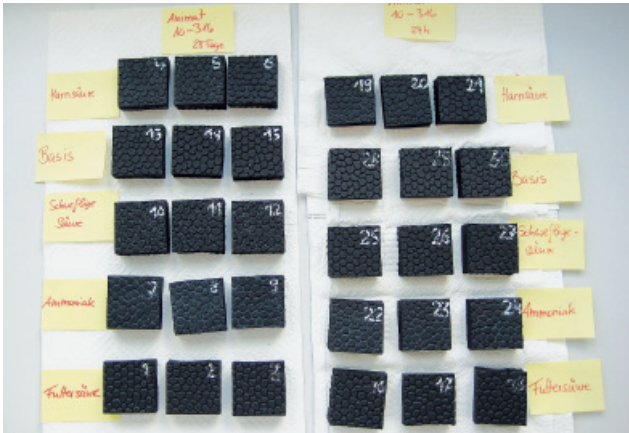
* Evaluation range:
++ / + / ○ / – / -- (○ = standard)

Table 1:
Test liquids and results: acid resistance

Test liquid	concentration	result after 24 hours residence time	result after 28 days residence time	Evaluation
Feed acid mixture	concentrate, pH 2	no changing	no changing	+ (resistant)
Excrement acids				
Uric acid	saturated urea solution (0,4 %)	no changing	no changing	+ (resistant)
Sulfurous acid	5-6 % SO ₂	no changing	little colour changing (light colored spots on the surface)	+ (resistant)
Ammonia solution	32 % solution	no changing	no changing	+ (resistant)
Disinfection liquid				
	2 %-solution of a product with formic acid and glyoxyl acid	no changing	no changing	+ (resistant)



Picture 4:
Test sample after the abrasion test



Picture 5:
Test samples after acid test





Testing

The DLG FokusTest included technical measurements on test rigs and in the chemical lab of the DLG test station. Deformability and elasticity were examined and a permanent tread load test was carried out. Examinations of abrasion resistance in an abrasion test using an emery cloth, examinations of slip resistance with the aid of slide pulling tests were carried out. The cleaning distances, where no damage occurs, was measured and the acid resistance was examined.

Other criteria were not tested.

Realization of the tests

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ENTAM – European Network for Testing of Agricultural Machines, was created from the merger of European testing sites. ENTAM's objective is the Europe-wide distribution of test results for farmers, agricultural equipment dealers, and producers.

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