DLG Fokus Test

Geyer & Hosaja cow mat for cubicles Leg Mat, Test-Nr.: 11-100

Registering and manufacturing company

Geyer & Hosaja Sp. z.o.o.
Zaklady Gumowe w Partynia 12, 39-310 Radomsl Wielki, Polen
Telefon: 0048 14 680 67 76   Telefax: 0048 14 680 67 07
E-mail: jankabara@geyer-hosaja.com.pl   Internet: www.geyer-hosaja.com.pl

Description

Black rubber mat for the resting area of high cubicles in cattle housing, thickness approximately 30 mm. Upper side with hammerstroke structure, underside with balks and knops. Balks ca. 9 mm high, width ca. 14 mm, length ca. 43,5 mm; knops ca. 4,5 mm high, diameter ca. 17,5 mm. Shore A hardness: 70.

Available sizes: Length 170 cm, 175 cm und 180 cm. Width: 110 cm, 115 cm und 120 cm. Installation as a single mat.
**Test results and detailed evaluations**

**Deformability and elasticity**

In ball penetration tests in new condition with a spherical cap \(r=120\) mm) and a penetration force of 2.000 N (corresponding to ca. 200 kg), penetration depth was 9.4 mm. The calculated bearing pressure of 28.2 N/cm² indicates a relatively small load on the carpal joints during lying down and getting up.

Elasticity was measured after the cow mat had been exposed to a continuous tread load exerted by the steel foot (contact area 75 cm²) and 100,000 alternating loads of 10,000 N. After the endurance test, the penetration depth of the spherical cap increased from 9.4 mm to 9.7 mm. The calculated bearing pressure reduced from 28.2 N/cm² to 27.4 N/cm². This means that deformability and elasticity increases slightly.

**Evaluation:** Deformability and elasticity:
- In new condition (+)
- After continuous tread load (+)

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Deformability: penetration depth of the spherical cap \(r=120\) mm) as a function of the bearing pressure before and after the permanent tread load

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**Picture 2:** Deformability as a function of surface pressure (Neue Grafik)
**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 (100,000 alternating loads of 10,000 N (corresponding to ca. 1000 kg), the rubber mat showed no appreciable wear on the surface and little wear on the balks on the bottom. Lasting deformation could not be observed.

**Evaluation:**
- no appreciable wear on the surface (+)
- little wear on the balks on the bottom (o)
- no lasting deformation (++)

**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 1.6 mm, this corresponds to approximately 5 % of the rubber thickness. Of the ground surface (61.5 cm²) 3.2 grams were rubbed off.

**Evaluation:** The minor abrasion depth and the slight grit implicate a good wear resistance of the rubber mat (+).
Slip resistance

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

Evaluation: Good slip resistance on dry and wet rubber mat surface (+).
**Test**

The DLG FokusTest included technical measurements on test rigs 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.

Other criteria were not tested.

DLG e.V.
DLG Test Centre for Agricultural Machinery and Farm Inputs
i. O.                                        i. O.

Dr. Harald Reubold                            Dr. Michael Eise
(Reporting engineer)                          (Project manager farm inputs and technique animals)