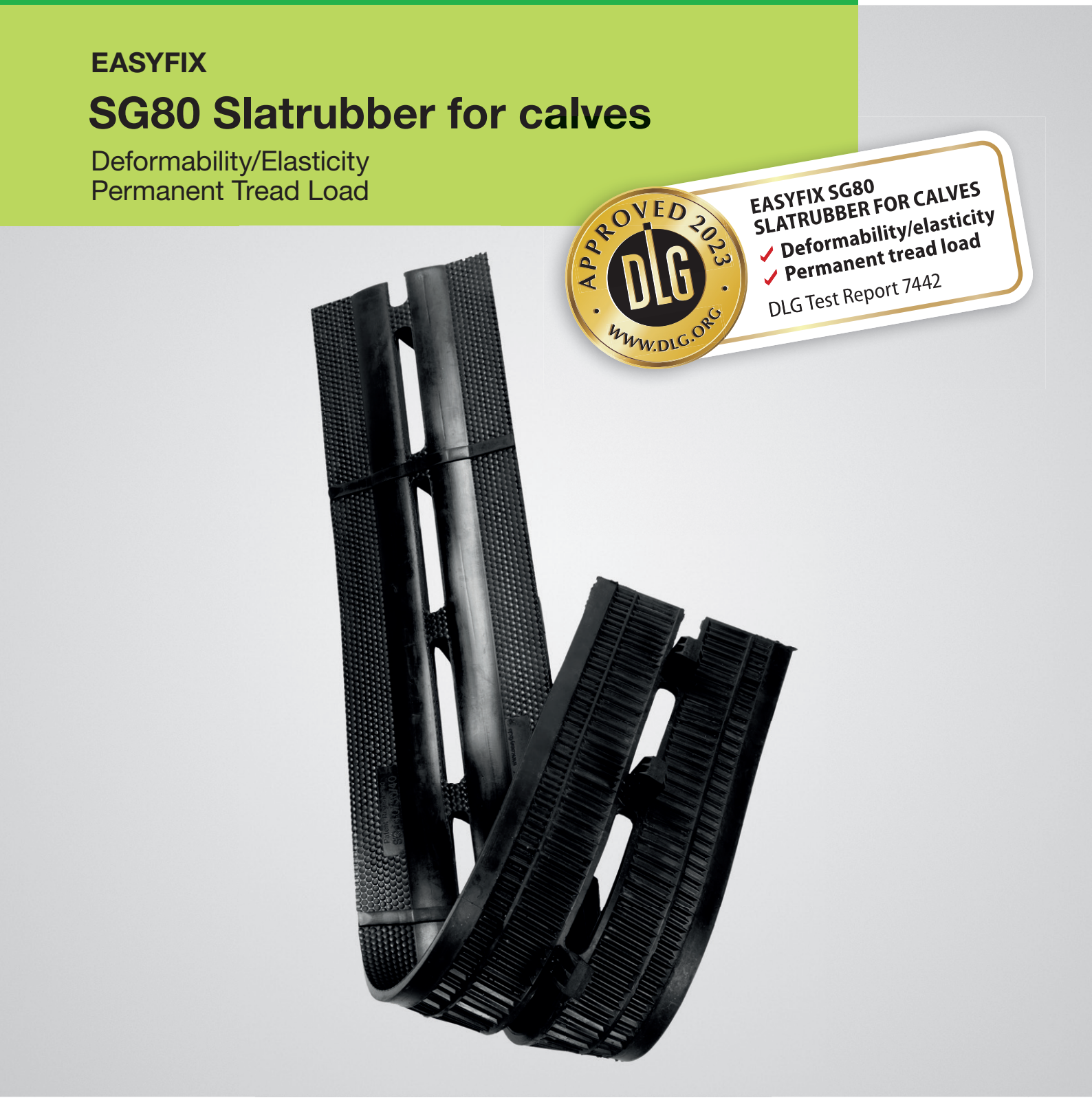
DLG Test Report 7442

EASYFIX

SG80 Slatrubber for calves

Deformability/Elasticity
Permanent Tread Load



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Overview

A test mark “DLG-APPROVED for individual criteria“ is awarded for agricultural products which have successfully fulfilled a scope-reduced usability testing conducted by DLG according to independent and recognised evaluation criteria. The test is intended to highlight particular innovations and key criteria of the test object. The test may contain criteria from the DLG test scope for overall tests, or focus on other value-determining characteristics and properties of the test subject. The minimum requirements, test conditions and procedures as well as the evaluation bases of the test results will be specified in consultation with an expert group of DLG. They correspond to the recognised rules of technology, as well as scientific and agricultural knowledge and requirements. The successful testing is concluded with the publication of a test report, as well as the awarding of the test mark which is valid for five years from the date of awarding.

The DLG Appoved Test “Deformability/Elasticity, Permanent Tread Load” includes technical measurements on test stands of the DLG Test Center. The deformability and elasticity were measured and a permanent tread load was applied. The test was based on the DLG Testing Frameworks for elastic stable flooring, as of December 2018 and DIN 3763:2022-08 (Elastic floorings for cattle and dairy cows walking and rest surfaces – Requirements and testing).

Other criteria were not investigated.

Assessment in brief

The SG80 Slatrubber flooring for calves tested here, was investigated with regard to durability and comfort properties on test stands in the DLG Test. The deformability and elasticity of the slatrubber were measured and a permanent tread load was applied.

Requirements DIN 3763 are fulfilled for the tested criteria. Deformation and Elasticity corresponds to class 2 DIN 3763 for single pens for calves.

Table 1:
Overview of results

DLG QUALITY PROFILE	Evaluation*
Lying measurement deformability and elasticity in new condition	■■■□□
Lying measurement deformability and elasticity following endurance test	■■■□□
Walking measurement deformability and elasticity in new condition	■■■■■
Walking measurement deformability and elasticity following endurance test	■■■■■
Lasting deformation following 250,000 endurance test	■■■■■
No noticeable wear and no damage following 250,000 endurance test	■■■■□

* DLG Evaluation range:
■■■ or better = meets, exceeds or significantly exceeds the established DLG standards,
■■ = meets the legal requirements for marketability, ■ = failed

The product

Manufacturer and Applicant

EASYFIX, Persse Business Park, Perssepark, Ballinasloe, Co. Galway, Ireland

Product:
SG80 Slatrubber
flooring for calves

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Description and technical data

The SG80 Slatrubber floor covering tested here, is an elastic floor covering for calves.

Black non-profiled slatted floor

- 15 to 20 mm thick
- fastening nubs on the underside (height approx. 60 mm, length approx. 40 mm, width approx. 30 mm) with integrated slope on the tread surfaces (height of the mat in the middle of the tread surface (20 mm and 15 mm at the slot)
- Underside with approx. 5 mm wide webs in two heights of 6 mm and 8 mm, distance of the webs to each other approx. 5 mm
- Installation as a single mat for slatted floors made of twin beams
- Shore A hardness: approx. 62
- Available dimensions:
  Length 500 mm to 2,000 mm, width from 80 mm to 150 mm
- Tread surface: 82 mm

The method

Deformability and elasticity

Lying measurement

The deformability is measured in new condition and following permanent tread load using ball penetration tests with a calotte (r = 120 mm) and a penetration force of 2,000 N (corresponding to approx. 200 kg).

Walking measurement

The deformability is determined in new condition and after the continuous tread load with a cow's foot modeled steel base and a penetration force of 2,000 N (approx. 200 kg). Where: the "artificial cow's foot" in its dimensions is the one used in the continuous tread load.

Permanent tread load

The measurement of the continuous tread load is carried out with 250,000 alternating loads at 5,000 N (corresponds to approx. 500 kg) on a test bench with a round steel foot.

The steel foot is adapted to the natural conditions as an "artificial cow foot". The foot has a diameter of 105 mm and therefore a contact area of 75 cm^2; the carrying edge of the hoof is simulated by a 5 mm wide ring on the periphery of the sole that projects 1 mm above the rest of the surface.

Detailed account of the test results

Deformability and elasticity

Lying measurement

In the ball penetration tests in new condition with a calotte (r = 120 mm), penetration depth was 6.2 mm. The resulting calculated bearing pressure of 42.8 N/cm^2 indicates a load on the carpal joints when lying down and getting up.

Elasticity was measured following a permanent tread load exerted by a steel foot (contact area: 75 cm^2) with 250,000 alternating loads at 5,000 N.

Following the endurance test, the penetration depth of the calotte decreased from 6.2 mm to 6.0 mm. The bearing pressure increased from 42.8 N/cm^2 to 44.2 N/cm^2 (see Fig. 3a).

This means that deformability and elasticity slightly decrease.

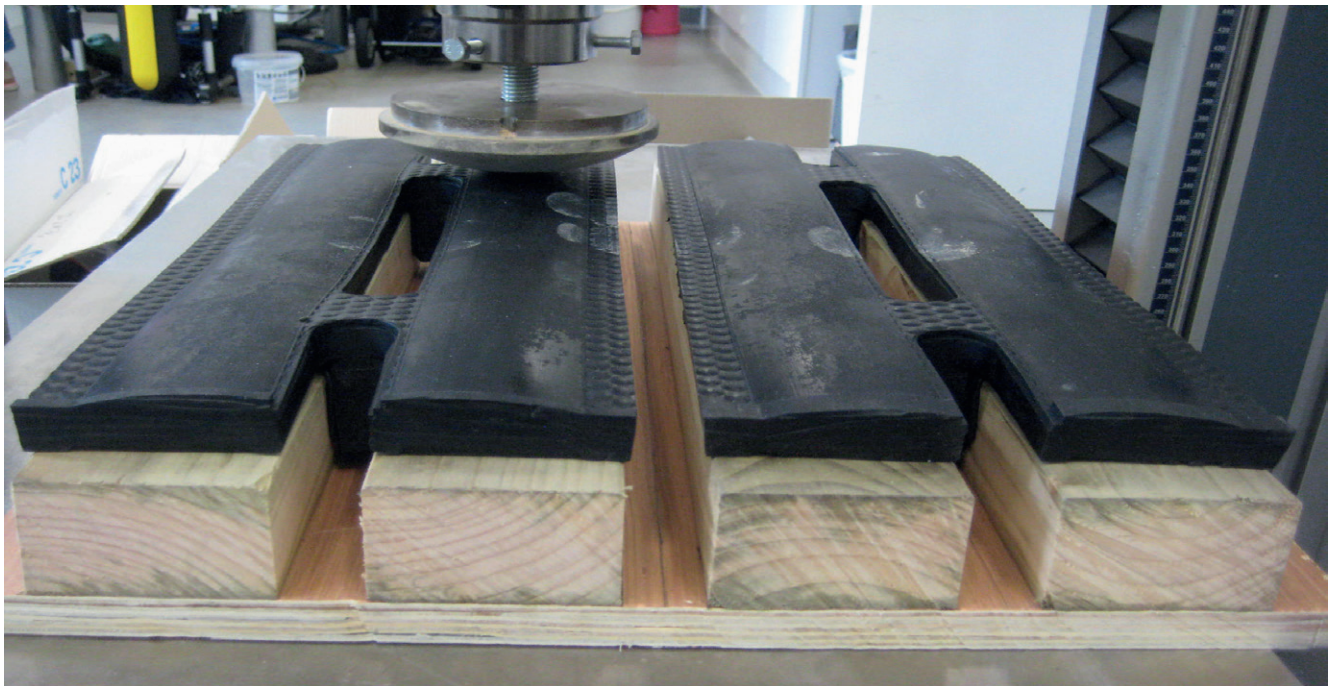

Figure 2:
Deformation measurement

Walking measurement

In the impression tests with an artificial cow foot was the depth of penetration of the walkway surface in new condition 5.6 mm. The calculated bearing pressure is 26.67 N/cm². The elasticity was measured after the permanent load tread by a steel base (contact area 75 cm²) with 250,000 alternating loads measured at 5,000 N.

The depth of penetration decreased after the endurance test of 5.6 mm to 5.3 mm. This means, that deformability and elasticity of the walkway covering decrease (see Fig. 3b).

Permanent tread load

After the continuous tread load on a test stand with 250,000 alternating loads at 5,000 N there was observed no noticeable wear and no damage on the surface of the mat.

No lasting deformation was observed.

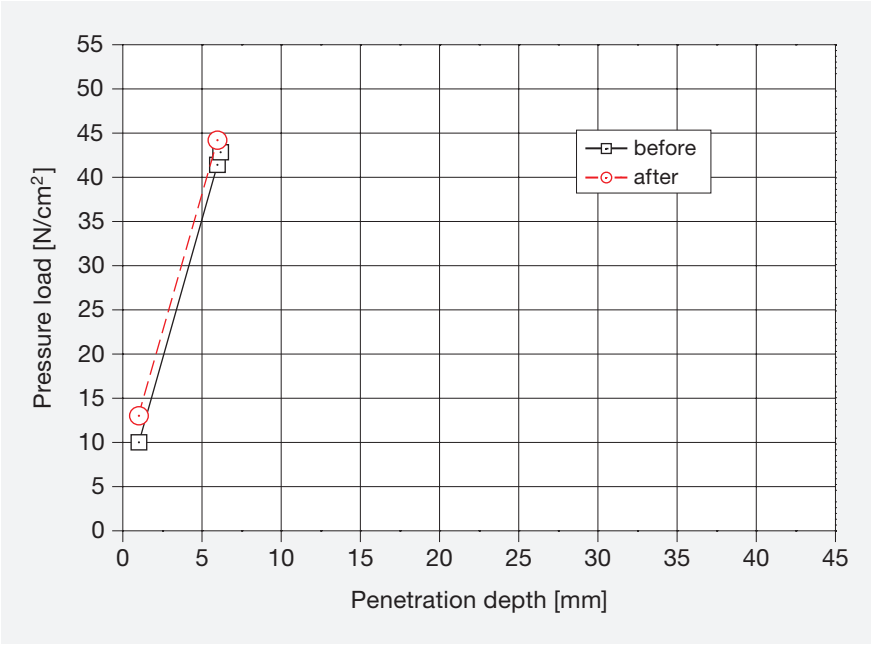

Figure 3a:
Lying measurement – deformability as function of bearing pressure

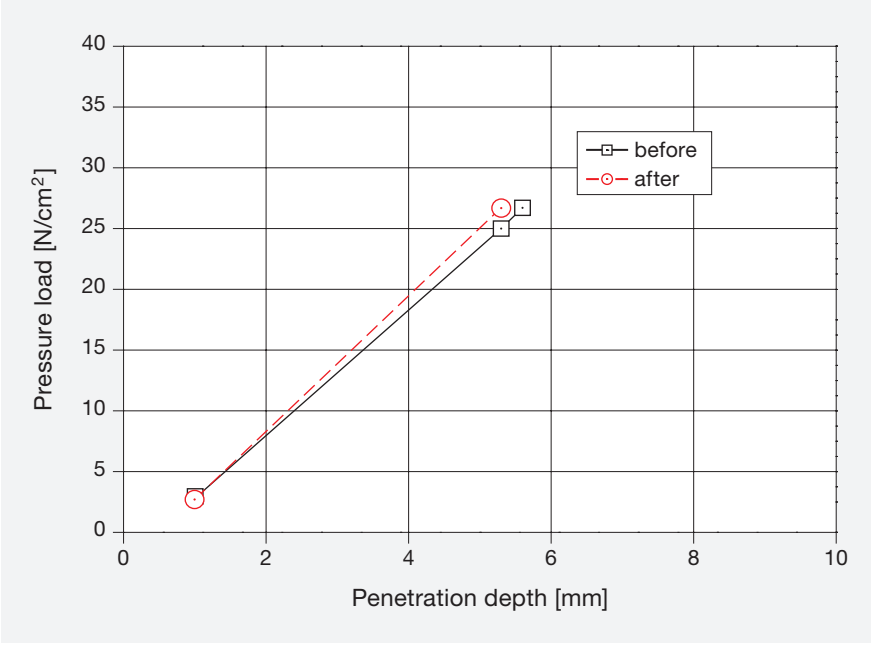

Figure 3b:
Walking measurement – deformability as function of bearing pressure

Summary

Based on test-stand investigations, the criteria tested in this DLG Approved Test evaluate the comfort and durability properties of the SG80 Slatrubber floor covering for calves

The tested calves mat met the requirements of DIN 3763 and the DLG Testing Framework with respect to the investigated criteria. Deformation and Elasticity corresponds to class 2 DIN 3763 for single pens for calves.

Further information

Testing agency

DLG TestService GmbH,
Gross-Umstadt location

The tests are conducted on behalf of DLG e.V.

DLG test framework

DLG Testing Frameworks for elastic stable flooring, as of December 2018

DIN 3763:2022-08 (Elastic floorings for cattle and dairy cows walking and rest surfaces – Requirements and testing)

Department

Agriculture

Division head

Dr. Michael Eise

Test engineer(s)

Dr. Harald Reubold*

* Author

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Internal test code DLG: 2309-0021

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