

**Bioret Agri**

# Magellan Alley Mat

Deformability/Elasticity,  
Permanent tread load,  
Slip resistance



- BIORET AGRİ MAGELLAN**
- ✓ Deformability/Elasticity
  - ✓ Permanent Tread Load
  - ✓ Slip resistance

DLG Test Report 7494



## Overview

A quality mark “DLG APPROVED for single value-determining criteria” is awarded to agricultural products which successfully passed a smaller-scope DLG usability test according to independent and recognized evaluation criteria. The test intends to highlight special innovations and key criteria of the test item. The test can focus on criteria from the DLG testing framework for full tests or on other individual features or qualitative criteria. The minimum requirements, the test conditions and procedures as well as the evaluation guidelines of the test results are determined in consultation with a DLG expert group. They comply with the generally recognized technology rules as well as with scientific and agricultural knowledge and requirements. The successful test concludes with the publishing of a test report and the awarding of a quality mark which is valid for five years following the award date.



The DLG Approved Test “Deformability/Elasticity, Permanent tread load, Slip resistance” includes technical measurements on test stands of the DLG Test Center. The deformability and elasticity as well as the slip resistance were measured and a permanent tread load was applied. The test was based on the DLG Testing Framework 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 – brief summary

The Bioret alley mat Magellan tested here, an elastic floor for walking ways in cubicle houses, was investigated with regard to durability and comfort properties on test stands in the DLG APPROVED test for single value-determining criteria. The deformability and elasticity, the slip resistance were measured and a permanent tread load was applied.

Requirements of DIN 3763 fulfilled in the examined criteria.

*Tabelle 1:  
Ergebnisse im Überblick*

DLG QUALITY PROFILE	Evaluation*
Deformability and elasticity in new condition	■ ■ ■ ■ □ *
Deformability and elasticity following endurance test	■ ■ ■ ■ ■ *
Lasting deformation following endurance test	■ ■ ■ ■ ■ *
Wear following endurance test	■ ■ ■ ■ □ *
Slip resistance	■ ■ **

The DLG test framework specifies the following evaluation range:

\* ■ ■ ■ ■ or better = meets, exceeds or clearly exceeds the specified DLG standard, ■ ■ = meets the statutory requirements for marketing the product, ■ = failed

\*\* Single criteria slip resistance: ■ ■ = passed, ■ = failed

## The product

### Manufacturer and Applicant

Bioret Agri, Z.I. de la Sangle, F-44390 Nort Sur Erdre Frankreich

Product: Magellan Alley Mat

Contact: Telephone 0033 240 721230, fax 0033 240 722503, contact@bioret-agri.com, www.bioret-agri.com

### Description and Technical Data

Black profiled rubber mat with inlay at the bottom.

- thickness: approx. 30 mm
- upper side: Stepping area with V-shaped grooves (with integrated slope) and knops, grooves (width approx. 25 mm and depth approx. 19 mm) between the stepping area.
- under side: with diamond structure
- Shore A Hardness: approx. 72
- Seamless installation

## The method

### Deformability and elasticity

The deformability is measured in new condition and following permanent tread load with a round steel foot (diameter of 105 mm and therefore a contact area of 75 cm<sup>2</sup>) and a penetration force of 2,000 N (corresponding to approx. 200 kg).

### Permanent tread load

The permanent tread load is measured on a test stand with a round steel foot in the standard test programme with 250,000 alternating loads at 5,000 N (corresponding to approx. 500 kg). 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<sup>2</sup>; 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

### Slip resistance

The measurements were carried out with the Comfort Control test rig of the DLG Test Center.

A loaded (10 kg) round plastic foot (105 mm diameter, with a contact area of 75 cm<sup>2</sup>, 3 mm wide ring at the periphery of the ground) was pulled with a velocity of 20 mm/s across the mat.

## The test results in detail

### Deformability and elasticity

In the penetration test in new condition with a round steel foot (artificial cow's foot) having a diameter of 105 mm (contact area 75 cm<sup>2</sup>, 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 approx. 200 kg), penetration depth was 2.7 mm. This results in a calculated surface pressure of 26.7 N/cm<sup>2</sup>.

Elasticity was measured after the Magellan 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 3.0 mm. (see Fig. 2).

Evaluation see table 1.

### Permanent tread load

After the Magellan Mat had been exposed to a permanent tread load exerted with 250.000 alternating loads of 5.000 N (corresponding to approx. 500 kg), the mat showed no noticeable wear. Lasting deformation could not be observed.

Evaluation see table 1.

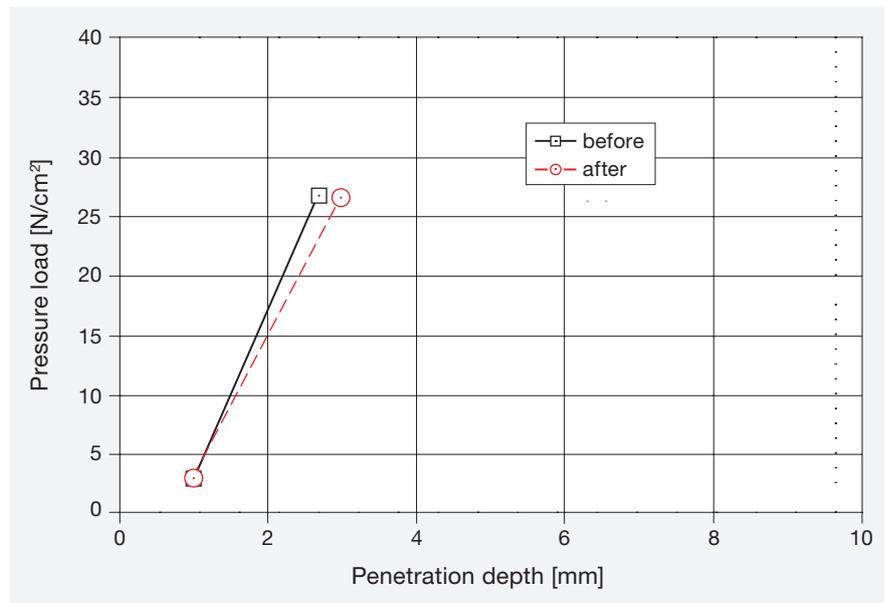


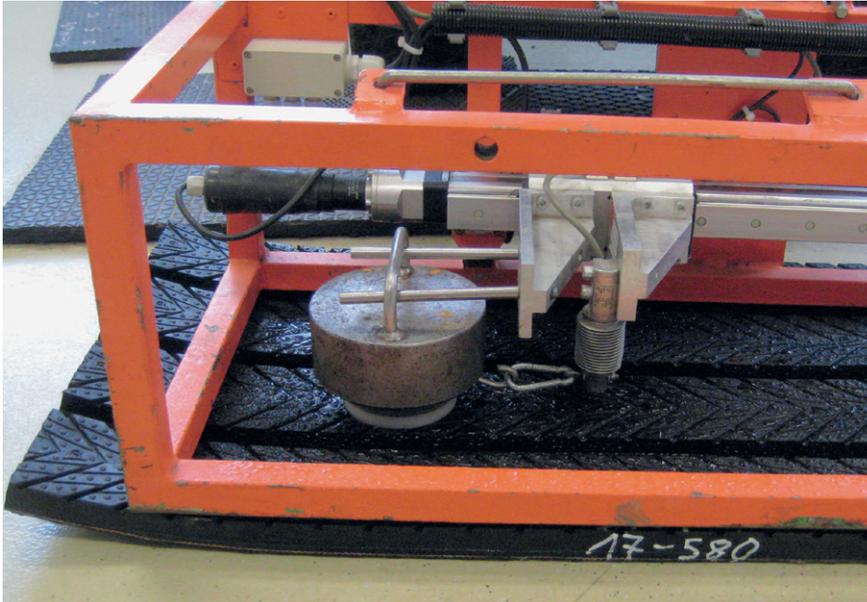
Figure 2:  
Deformability as a function of bearing pressure



Figure 3:  
Permanent tread load



Figure 4:  
Measuring the deformability



### Slip resistance

The slide pulling tests showed a good slip resistance on the dry or wet mat surface in new condition. The measured friction coefficients ( $\mu$ ) all surpassed the minimal value of  $\mu = 0.40$  (DIN 3763) and  $\mu = 0.45$  (DLG test program) which speaks for a good foothold.

*Evaluation see table 1.*

*Figure 5:  
Slip resistance measurement*

## Summary

Based on test-stand investigations, the criteria tested in this DLG-APPROVED test for single value-determining criteria evaluate the comfort and durability properties of the Bioret Magellan Mat for use in the walking ways in cubicle houses.

The tested Bioret Magellan Mat met the requirements of the Testing Framework and DIN 3763 with respect to the investigated criteria.

## Further information

### Testing agency

DLG TestService GmbH,  
Gross-Umstadt location, Germany

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

### DLG test framework

DLG Testing Framework 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

## DLG. An open network and professional voice.

Founded in 1885 by the German engineer Max Eyth, DLG (Deutsche Landwirtschafts-Gesellschaft – German Agricultural Society) is an expert organisation in the fields of agriculture, agribusiness and the food sector. Its mission is to promote progress through the transfer of knowledge, quality standards and technology. As such, DLG is an open network and acts as the professional voice of the agricultural, agribusiness and food sectors.

As one of the leading organisations in the agricultural and food market, DLG organises international trade fairs and events in the specialist areas of crop production, animal husbandry, machinery and equipment for farming and forestry work as well as energy supply and food technology. DLG's quality tests for food, agricultural equipment and farm inputs are highly acclaimed around the world.

For more than 130 years, our mission has also been to promote dialogue between academia, farmers and

the general public across disciplines and national borders. As an open and independent organisation, our network of experts collaborate with farmers, academics, consultants, policymakers and specialists in administration in the development of future-proof solutions for the challenges facing the agriculture and the food industry.

### Leaders in the testing of agricultural equipment and input products

The DLG Test Center Technology and Farm Inputs and its test methods, test profiles and quality seals hold a leading position in testing and certifying equipment and inputs for the agricultural industry. Our test methods and test profiles are developed by an independent and impartial commission to simulate in-field applications of the products. All tests are carried out using state-of-the-art measuring and test methods applying also international standards.

The Magellan alley mat already received the DLG APPROVED Test Mark in 2017.

The results presented in the report are based on DLG test report 6774. According to the applicant, the alley mat is produced unchanged in the tested version.

Internal test code DLG: 2402-0042

Copyright DLG: © 2024 DLG



**DLG TestService GmbH**

**Groß-Umstadt location**

Max-Eyth-Weg 1 • 64823 Groß-Umstadt • Germany

Phone +49 69 24788-600 • Fax +49 69 24788-690

Tech@DLG.org • www.DLG.org

**Download of all  
DLG test reports free of charge  
at: [www.DLG-Test.de](http://www.DLG-Test.de)**