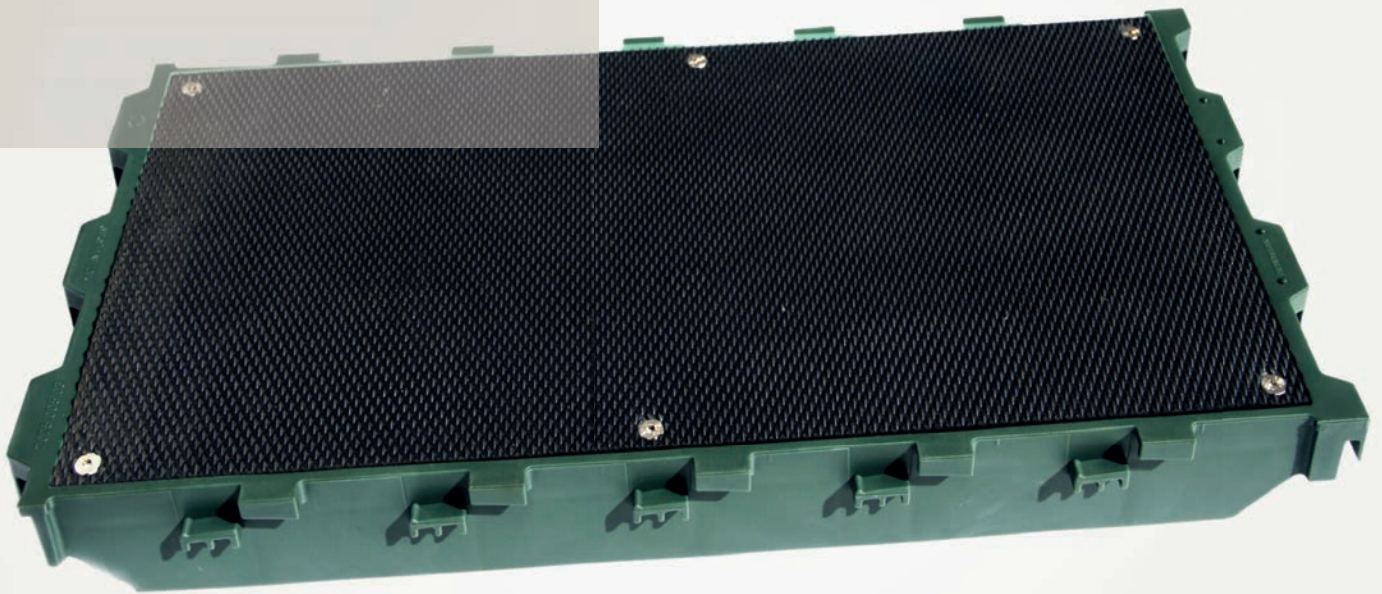


PREMIUMFLOOR GmbH

PREMIUM Rubber-Topper for Pigs

Abrasion, Slip resistance, Acid resistance



**PREMIUMFLOOR
PREMIUM RUBBER-TOPPER
FOR PIGS**

- ✓ Abrasion
- ✓ Acid resistance
- ✓ Slip resistance

DLG Certificate 7603

Überblick

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 test was based on the DLG Testing Framework for elastic flooring for pigs, as of February 2023 and DIN 3763:2022-08 (Elastic floorings for cattle and dairy cows walking and rest surfaces – requirements and testing). Other criteria were not tested.



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- ✓ **Abrasion**
- ✓ **Acid resistance**
- ✓ **Slip resistance**

DLG Certificate 7603

The product

Applicant

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 Marienstraße 15, 56269 Marienhausen, Germany

Product:
 PREMIUM Rubber-Topper

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Description and technical data

The elastic flooring is suitable for use in pig resting areas.

- Elastic rubber surface (17 mm thick, textured with 1.3 mm-high studs and installed) for PP Copo plastic grating (rigid component, manufactured using injection molding)
- Total thickness: 64.5 mm
- Shore A: approx. 64

Assessment in brief

Table 1:
 Overview of results

DLG QUALITY PROFIL	Evaluation
Abrasion	■ ■ ■ ■ *
Resistance to feed acid mixture	■ ■ ■ **
Resistance to uric acid	■ ■ ■ **
Resistance to sulfurous acid	■ ■ **
Resistance to ammonia	■ ■ ■ **
Resistance to barn disinfectants	■ ■ ■ **
Resistance to peracetic acid	■ ■ ■ **
Slip resistance	■ ■ ***

The PREMIUM Rubber-Topper elastic flooring is suitable for use in pig resting areas. It was tested for durability and comfort in the DLG-APPROVED for individual criteria.

The requirements of the DLG testing program for elastic flooring systems for pigs (as of February 2023) were fulfilled.

DLG Evaluation range:

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

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

*** Single criteria acid resistance: ■ ■ ■ = resistant, ■ ■ = limited resistant, ■ = failed

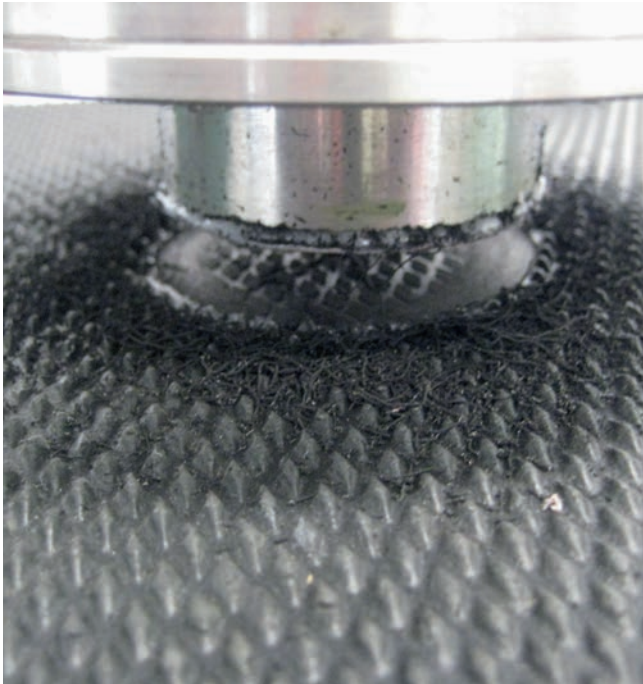


Figure 2:
Abrasion test



Figure 3:
Slip resistant measurement

Abrasion test

In a standardised abrasion test with 10,000 cycles the top cover was grinded with an emery cloth (granulation 280) and a grinding pressure of 250 N. The friction element was cooled continuous with water to prevent an influence of the generated heat during the abrasion test. The size of the grinded area was 61,5 cm².

Acid resistance

A permanent dipping test in accordance to DIN 7861 was carried out. Test samples (size 30 mm x 30 mm) were completely dipped into different test liquids for 24 hours and 28 days (room temperature 20° Celsius).

In the 28 days test the liquids were changed weekly. After the 28 days the samples were washed with distillate water and dried for 24 hours. Before and after the dipping the weight, the dimensions and the shore hardness (shore A) of the test samples were measured.

Additional visual evaluation was done for alterations like colour changing, swelling, destruction or crystallisation. All samples were evaluated in comparison to the standard water.

Slip resistance

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

A polyamide plastic foot loaded with 10 kg, designed to simulate a pig's hoof (40 mm in diameter, contact area approximately 20 cm²), was dragged across the test mat at a speed of 20 mm/s.

Detailed account of the test results

Abrasion test

The abrasion depth after 10,000 cycles amounted to 1,5 mm, this corresponds to approximately 2.3 % of the rubber thickness. Of the ground surface 0.9 grams were rubbed off.

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

Slip Resistance

The slide pulling tests showed a good slip resistance on the dry or wet rubber mat surface in new condition. The measured friction coefficients (μ) in this test – ranging from 0.5 to 0.7 – are significantly higher than the minimum value of $\mu = 0.25$ (DLG test program).

Acid resistance

The rubber mat was resistant against the used test liquids. The differences in weight, thickness and Shore A hardness between the acid treated and not acid treated samples were minor and lay in the range of water as standard.

Against the used liquids the rubber mat seems to be suited for the described use.



Figure 4:
Test sample after acid resistance test

Table 2:

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	color change, whitish film	limited resistant
Ammonia solution	32 % solution	no changing	no changing	resistant
Disinfection liquid				
Barn disinfectants	2 %-solution of a product with formic acid and glyoxyl acid	no changing	no changing	resistant
Peracetic acid	undiluted	no changing	no changing	resistant

Summary

The tested flooring for pigs fulfilled the requirements of the DLG testing framework with regard to the criteria examined.

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 flooring for pigs
(current as of 08/2022)

Department

Agriculture

Division head

Dr. Michael Eise

Test engineer(s)

Alena Scholz*

* Author

DLG – the 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.

Internal test code DLG: 2511-0057

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