

Promat Inc.

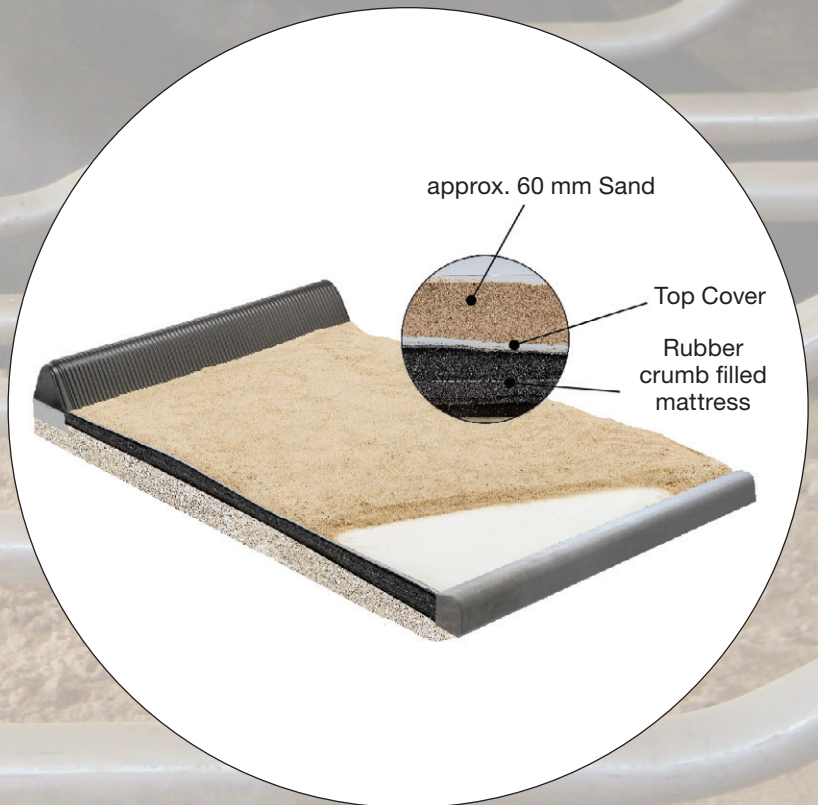
Pack Mat with Sand

Deformability/Elasticity, Permanent Tread Load



PROMAT PACK MAT WITH SAND

- ✓ Deformability/Elasticity
 - ✓ Permanent Tread Load
- DLG Test Report 7023



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 recognized 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 recognized 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 Approved 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 Framework for elastic stable flooring, as at April 2010. Other criteria were not investigated.

Assessment – Brief Summary

The Promat Pack Mat with Sand, an elastic floor for deep bedding cubicles in cubicle houses, was investigated with regard to durability and comfort properties on test stands in the DLG Approved Test. The deformability and elasticity were measured and a permanent tread load was applied.

Table 1:
 Overview of results

Test characteristic	Test result	Evaluation*
Deformability and elasticity		
– in new condition	40.7 mm, very good	++
– following endurance test	28.8 mm, very good	++
Permanent tread load		
	clear lasting deformation of the hoses filled with rubber granulate	-
	no noticeable wear	+

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

The Product

Manufacturer and Applicant

Promat Inc., 594711 County Rd. 59 South, Woodstock Ontario

Product:

Promat Pack Mat with Sand

Contact:

Telephone +519 456 2284, Fax +519 456 1458, sales@promatinc.com, www.promatinc.com

Description and Technical Data

The Promat Pack Mat with Sand tested here, an elastic floor for deep bedding cubicles in cubicle houses

- total height: approx. 110 mm
- underlay
 - thickness: approx. 50 mm
 - made of hoses filled with rubber granulate
 - tan top cover (approx. 3 mm tick)
- sand filling: approx. 60 mm
- 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 cm²) and a penetration force of 2,000 N (corresponding to approx. 200 kg).

The foot has a diameter of 105 mm and therefore a contact area of 75 cm²; 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. To simulate the daily maintenance of the box the sand was continuously smoothed during the test.

Permanent tread load

The permanent tread load is carried out on a test stand with a round steel foot in the standard test programme with 100,000 alternating loads at 10,000 N (corresponding to approx. 1000 kg). The steel foot is adapted to the natural conditions as an "artificial cow foot".

The Test Results in Detail

Deformability and elasticity

In the ball penetration tests in new condition with a calotte ($r = 120 \text{ mm}$), penetration depth was 40.7 mm . The resulting calculated bearing pressure of 6.5 N/cm^2 indicates a very low 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 100,000 alternating loads at 10,000 N. Following the endurance test, the penetration depth of the calotte decreased from 40.7 mm to 28.8 mm . The bearing pressure increased from 6.5 N/cm^2 to 9.2 N/cm^2 (see Fig. 2). This means that deformability and elasticity decrease.

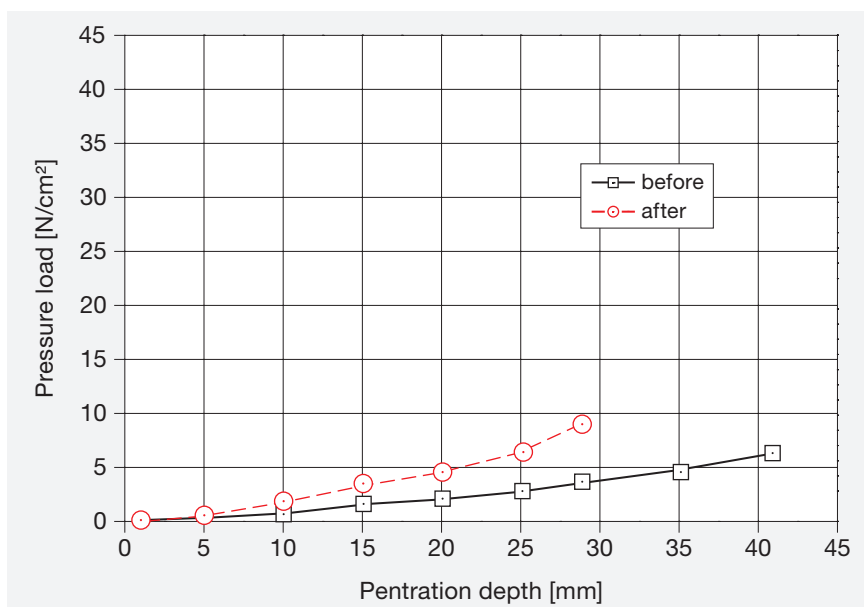


Figure 2:
Deformability as a function of bearing pressure

Permanent tread load

No noticeable wear was observed following exposure to permanent tread load on a test stand with 100,000 alternating loads at 10,000 N. The hoses filled with rubber granulate were compressed and a lasting deformation of 26 mm was measured. Given an original height of approx. 50 mm , this means that the height of the mattress decreased by about 52% . Up to 30% is defined as standard. With a continuously maintenance of the box and bring in additional sand this can be balanced.

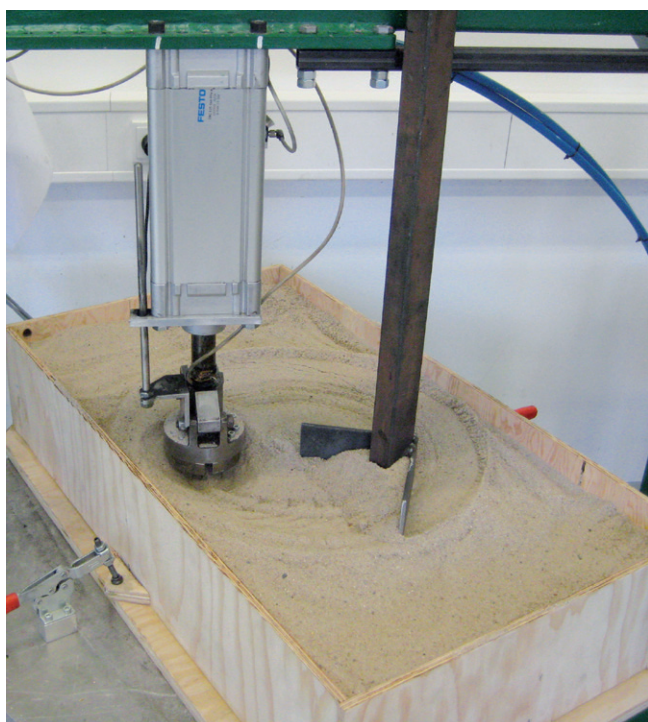


Figure 3:
Permanent tread load



Figure 4:
Measuring the deformability in new condition

Summary

Based on test-stand investigations, the criteria tested in this DLG Approved Test evaluate the comfort and durability properties of the Promat Pack Mat with Sand for use in the resting area of deep bedding cubicles in cubicle houses.

The tested Promat Pack Mat with Sand met the requirements of the Testing Framework with respect to the investigated criteria.

More information

Testing agency

DLG TestService GmbH,
Gross-Umstadt location

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

DLG test framework

DLG Approved Test “Elastic Stable Flooring”
(current as of 04/2010)

Department

Indoor operations

Head of Department

Dr. Michael Eise

Test engineer(s)

Dr. Harald Reubold*

* 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

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Internal test code DLG: 2019-535

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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

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