

DLG Test Report 6388

Huber Technik Vertriebs GmbH

Soft Bed 4GS (HT 4/30)

Deformability/Elasticity, Permanent Tread Load, Tensile Strength, Ultimate Elongation

OVERVIEW

A quality mark “**DLG-APPROVED for single value-determining criteria**” is awarded to agricultural products which have 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 for single value-determining criteria “**Deformability/Elasticity, Permanent Tread Load, Tensile Strength and Ultimate Elongation**” consists of technical measurements on test stands and in laboratories of the DLG test center. Tensile Strength, Ultimate Elongation, Deformability and Elasticity has been measured, 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.

EVALUATION – SUMMARY

The Huber Cubicle 4GS (HT 4/30) tested here is an elastic flooring in the resting area in cubicle houses. It was investigated regarding durability and comfort properties on test stands in the DLG Approved Test. The deformability and elasticity of the rubber mat were measured and a permanent tread load was applied.

Test Characteristic	Test Result	Valuation*
Deformability and Elasticity		
New condition	19.8 mm	++
Endurance Test	21.0 mm	++
Permanent Tread Load		
	No permanent deformation	++
	No appreciable abrasion	+
Tensile Strength and Ultimate Elongation		
	Very good tensile strength	++
	Satisfying ultimate elongation	O

* Evaluation range: + = resistant; O = limited resistant; – = not resistant

THE PRODUCT

Manufacturer and Applicant

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Product:
Cubicle 8GS

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Description and Technical Data

The tested Huber soft bed 4GS is an elastic flooring

- For raised stalls
- Surface black rubber mat type 4GS with fabric lining
 - Top coat with hammer top surface
 - Bottom with red fabric
 - Thickness approx. 4.5 mm
- Hardness Shore A: approx. 65
- Base of mattress consists of approx. 30 mm thick grey foam panel
- Installed as rolls

METHOD

Deformability and Elasticity

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).

Permanent Tread Load

The permanent tread load is measured 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. 1,000 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 cm²; the carrying edge of the hoof is simulated by a 5 mm wide ring

Tensile Strength and Ultimate Elongation

The force during tearing and the measuring length during tearing followed the rules of DIN 53504. This was created using the machine “Zwick Z 100” at the DLG test center and so the tensile strength and the ultimate elongation were measured. 5 dumbbell samples were stretched out and tested in the longitudinal direction as well as in transverse direction.

TEST RESULTS IN DETAIL

Deformability and Elasticity

During the test with a calotte ($r = 120\text{mm}$) the penetration depth at new condition was 19.8 mm. The resulting calculated bearing pressure of 13.4 N/cm^2 indicates a small load on the cow's carpal joints when lying down and getting up. Elasticity was measured following a 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 increased from 19.8 mm to 21.1 mm. The bearing pressure decreased from 13.4 N/cm^2 to 12.6 N/cm^2 . This means that deformability and elasticity increased only slightly.

Permanent Tread Load

After the Permanent Tread Load at the test stand with 100,000 alternating loads at 10,000 N, no appreciable wear could be observed on the surface or on the bottom foam side. No lasting deformation was determined.

Tensile Strength and Ultimate Elongation

Please see the results of the tensile strength and the ultimate elongation in the chart at the following charts.

Dumbbell sample (longitudinal)	Tensile Strength (N/mm^2)	Ultimate Elongation (%)
No. 1	22.85	35.64
No. 2	20.85	38.25
No. 3	7.20	22.76
No. 4	22.00	41.20
No. 5	21.59	37.76
Average	18.90	35.12

Dumbbell sample (transverse)	Tensile Strength (N/mm^2)	Ultimate Elongation (%)
No. 1	28.69	26.95
No. 2	21.05	26.15
No. 3	26.85	25.88
No. 4	26.89	27.16
No. 5	20.01	25.91
Average	24.70	26.41

RESULT

Based on test-stand investigations, the criteria tested in this DLG Approved Test evaluate the comfort and durability properties of Huber's soft bed 4GS (HT 4/30) for usage in the resting area of raised stalls. The soft bed has met the requirements of all criteria.

FURTHER INFORMATION

Please go to www.dlg-test.de/stalleinrichtungen to download more reports on animal welfare and cattle farming.

ABOUT DLG

In addition to being the executing body of well-known tests for agricultural engineering, farm inputs and foods, the DLG is also an open forum for the exchange of knowledge and opinions in the agricultural and food industry. Some 180 full-time employees and more than 3,000 volunteer experts are developing solutions to current problems. There are over 80 committees, working groups and committees who create the base of expertise for professional work. At the DLG, a great deal of specialist information for agriculture is created in the form of information leaflets and working papers, as well as articles in journals and books. DLG organizes the world's leading professional exhibitions for the agriculture and food sector. This contributes to the transparent presentation of modern products, processes and services to the public. Further information can be obtained under www.dlg.org/mitgliedschaft.

The DLG Test Center Technology and Farm Inputs

The DLG Test Centre Technology and Farm Inputs in Groß-Umstadt is the benchmark for testing agricultural products and farm inputs, as well as a leading testing and certification service provider for independent technology tests. The DLG test engineers precisely examine product developments and innovations by utilizing state-of-the-art measurement technology and testing methods gained from experience. As an accredited and EU registered testing laboratory the DLG Test Center Technology and Farm Inputs offers farmers and practitioners vital information and decision-making support for the investment planning of agricultural technology and farm inputs through recognized technology tests and DLG testing.

Please find all pictures, graphs, charts and seals in the official German version of the DLG test.