

DLG Test Report 6402

Genial Project

Griglio sand-filled honeycomb stall mat

BTS Cattle¹ (Females)



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GRIGLIO SAND-FILLED
HONEYCOMB STALL MAT

✓ BTS Cattle
(Females)

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Test Center
Technology and Farm Inputs

www.DLG-Test.de

Overview

DLG-APPROVED Single value-determining criteria

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 “BTS Cattle¹” included joint inspections and behavioural observations during standing up and lying down in three working farms, as well as measurement of deformability on test rigs at the DLG Test Center



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Technology and Farm Inputs. Data was acquired and analysed in accordance with the “Requirements of the BTS Programme Regarding Deformable Mattresses for Bovine Livestock” (Swiss Ethics Programme Ordinance of 25th June 2008, Annex 3).

Other criteria were not investigated.

Assessment – Brief Summary

The Griglio sand-filled honeycomb stall mat tested here was investigated with regard to comfort characteristics on test rigs in the DLG Approved Test “BTS Cattle¹”. Joint inspections were carried out in three real-life farms, and behavioural observations were

made during standing up and lying down. The requirements of the BTS programme regarding deformable mattresses for bovine livestock (Swiss Ethics Programme Ordinance of 25th June 2008, Annex 3) are met.

¹ Swiss support programme for especially animal-friendly housing systems (“Besonders tierfreundliche Stallhaltungssysteme”, BTS)

The Product

Manufacturer/Applicant

Genial Project
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Product:

Griglio sand-filled honeycomb stall mat

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Description and technical data

Griglio sand-filled honeycomb stall mat. Made of rubber for deep-bedding stalls for cows and bovine animals.

- with 36 square holes, approx ca. 28,5 cm x 20 cm, that are filled with sand
- straw chaff should be spread over the surface to a depth of approx. 5 cm
- length approx. 151 cm, width approx. 113 cm, height approx. 12.5 cm
- weight approx. 50 kg for each mat
- shore hardness A: approx. 82

The mats are fastened to the designated fastening points on the floor using 12 bolts plus washers and dowels.

The Method

Deformability and elasticity

The deformability is measured using ball-indentation tests in new condition and following permanent tread load 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 rig with a round steel foot 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 on the periphery of the sole that projects 1 mm above the rest of the surface.

Animal health

At a minimum of three farms, the tarsi (ankle joints) of all² cows held in the relevant cowsheds are exam-

ined by an independent specialist with relevant experience, and the animals' behaviour while standing up and lying down on the floor covering is observed.

Mats of the make to be tested are installed in all cubicles at least three months before examination. The examined cows are held exclusively in the relevant cowshed for at least three months before the examination; i.e. they have no access to grazing.

² Exceptions: cows in the first trimester of lactation / non-lactating cows / cows that were held in the relevant cowshed for less than three months prior to examination (e.g. purchased; see 2.4) / cows that often lie in the walkway / cows that are ill or were ill recently (e.g. recumbency after calving) / cows injured due to an accident

The Test Results in Detail

Animal health

At three farms, the tarsi (ankle joints) of 103 cows were examined by an independent specialist with relevant experience, and the animals' behaviour while standing up and lying down on the floor covering was observed.

The requirements relating to BTS conformity are met.

Deformability and elasticity

A penetration depth of 26.6 mm was determined in ball-indentation tests in new condition with a calotte ($r = 120$ mm) and a penetration force of 2,000 N (corresponding to approx. 200 kg). A bearing pressure of 10.0 N/cm² was calculated from this, indicating a relatively small load on the carpal joints when lying down and

standing up. The elasticity was measured following a permanent loading test with a steel foot (contact area 75 cm²) with 100,000 alternating loads at 10,000 N. Following the endurance test, the penetration depth of the calotte decreased from 26.6 mm to 11.4 mm. The bearing pressure increased from 10.0 N/cm² to 23.3 N/cm² (see Figure 2). This corresponds to a decrease in deformability and elasticity.

The requirements relating to BTS conformity are met.

Permanent tread load

Clear wear was observed at the base of the honeycomb following permanent tread load with a steel foot (contact area 75 cm²) on a test rig with 100,000 alternating loads at 10,000 N (corresponding to approx. 1,000 kg). Permanent deformation was observed.

Figure 2: Deformability, penetration depth of the calotte ($r = 120$ mm) as function of bearing pressure

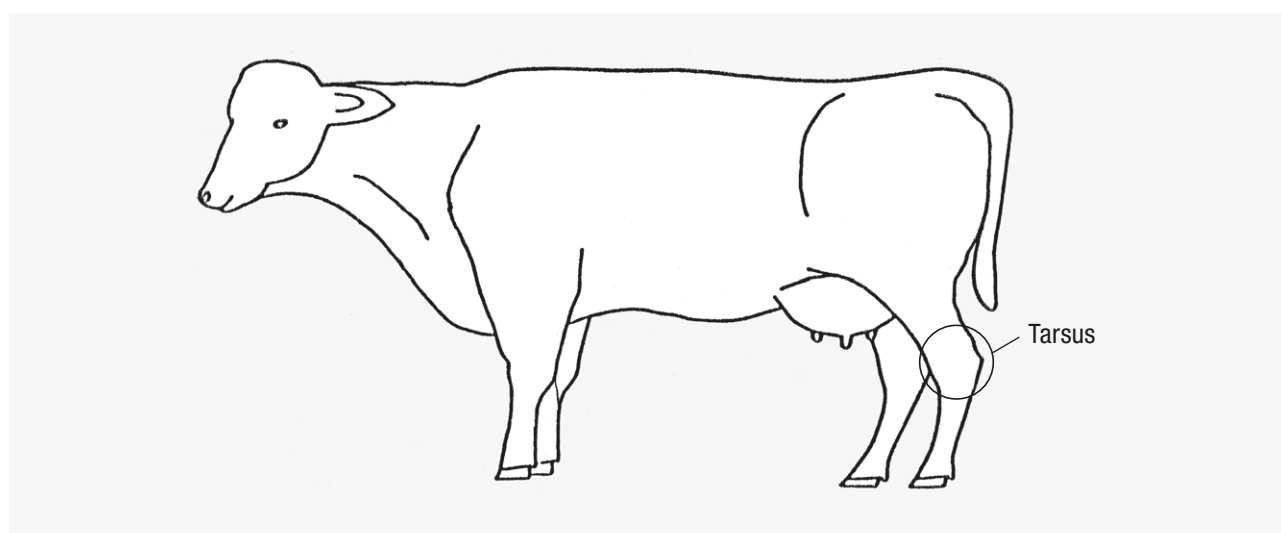
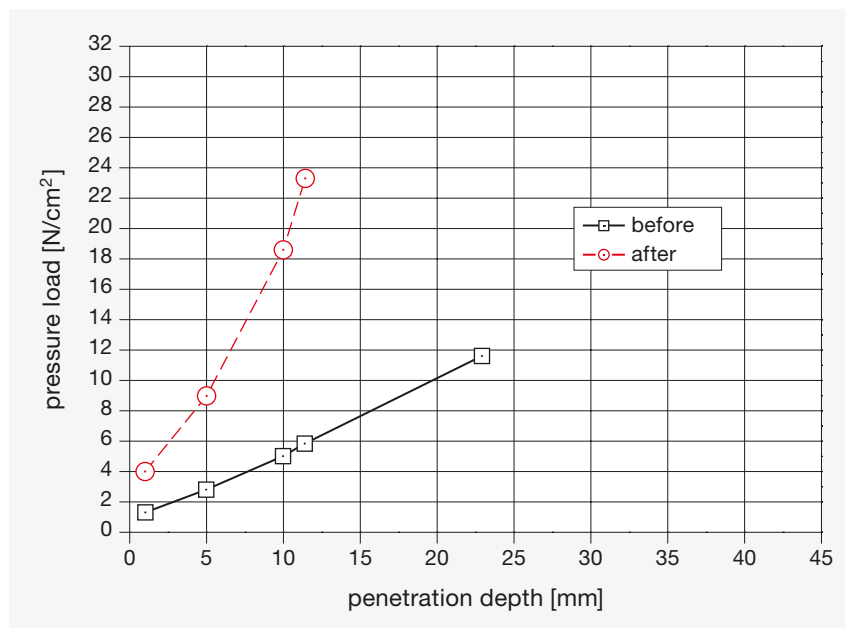


Figure 3: The shown joint was examined

Table 1:
Requirements for BTS conformity – test results – evaluation

	Requirement for BTS conformity ³	Test results	Evaluation
Animal health			
1. Tarsi (ankle joints) with scabs or open wounds as % of examined tarsi	max. 25 %	8.8 %	requirement met
2. Tarsi with larger scabs (> 2 cm) or larger open wounds (> 2 cm) as % of examined tarsi	max. 8 %	1.5 %	requirement met
3. Tarsi with another serious change (e.g. change in size) as % of examined tarsi	max. 1 %	0 %	requirement met
4. Other serious physical harm to the animals that could be caused by the sand-filled honeycomb stall mat	none	none	requirement met
5. Behavioural abnormalities that could be caused by the sand-filled honeycomb stall mat.	none	none	requirement met
Deformability and elasticity			
6. Penetration depth into the sand-filled honeycomb stall mat in new condition	min. 10 mm	26.6 mm	requirement met
7. Penetration depth into the sand-filled honeycomb stall mat following permanent tread load	min. 8 mm	11.4 mm	requirement met

Summary

The tested Griglio sand-filled honeycomb stall mat meets the requirements of the BTS programme regarding deformable

mattresses for bovine livestock (Swiss Ethics Programme Ordinance of 25th June 2008, Annex 3).

³ According to the requirements of the Swiss Federal Office for Agriculture, Berne, of March 2004

Further Information

Further test results for cubicle floorings are available for download at:

<http://www.dlg.org/stableequipment.html>

The relevant DLG committees have published various instruction leaflets on the topics of animal welfare and cattle farming. These are available free of charge in PDF format at: www.dlg.org/merkblaetter.html

Test execution

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Germany

DLG Testing Framework

BTS programme regarding deformable mattresses for bovine livestock (Swiss Ethics Programme Ordinance of 25th June 2008, Annex 3)

Field

Indoor operations

Project manager

Dipl.-Ing. agr. Susanne Gäckler

Test engineer(s)

Dr Harald Reubold*

* Reporting engineer

The DLG

In addition to conducting its well-known tests of agricultural technology, farm inputs and foodstuffs, the DLG acts as a neutral, open forum for knowledge exchange and opinion-forming in the agricultural and food industry.

Around 180 full-time staff and more than 3,000 expert volunteers develop solutions to current problems. More than 80 committees, working groups and commissions form the basis for expertise and continuity in technical work. Work at the DLG includes the preparation of technical information for the agricultural sector in the form of instruction leaflets and working documents, as well as contributions to specialist magazines and books.

The DLG organises the world's leading trade exhibitions for the agriculture and food industry. In doing so, it helps to discover modern products, processes and services and to make these transparent to the public.

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The DLG Test Center for Technology and Farm Inputs

The DLG Test Center Technology and Farm Inputs in Groß-Umstadt sets the benchmark for tested

agricultural technology and farm inputs and is the leading provider of testing and certification services for independent technology tests. With the latest measurement technology and practical testing methods, the DLG's test engineers carry out testing of both product developments and innovations.

As an EU-notified test laboratory with multiple accreditations, the DLG Test Center Technology and Farm Inputs provides farmers and practitioners with important information and decision-making aids, in the form of its recognised technology tests and DLG tests, to assist in the planning of investments in agricultural technologies and farm inputs.

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