

Aufenacker GmbH & Co. KG

# Aufenacker plastic panelling as a partition wall

**DLG Test Report 5363**



**Manufacturer and  
registering company**

Aufenacker GmbH & Co. KG  
Im Geer 11  
D-46419 Isselburg  
Telephone: 0049 (0)2874 45361  
Telefax: 0049 (0)2874 45364  
Internet: [www.aufenacker.de](http://www.aufenacker.de)  
Email: [info@aufenacker.de](mailto:info@aufenacker.de)



Deutsche Landwirtschafts-  
Gesellschaft e.V.  
Prüfstelle für Landmaschinen

## Short description

- Partition wall panelling out of HDPE plastic for the partitioning of pig pens and compartments from neighbouring pens, compartments, and control aisles (profile thickness 54 mm) consisting of
  - custom-made panels ranging from 400x400 mm to max. 2,370x6,000 mm in size -H-profiles as connecting pieces in compartment partition walls
  - as well as accessories (products purchased from another manufacturer, not tested) consisting of
    - galvanized posts,
    - stabilizers,
    - connections,
    - ground angles,
    - U-rails
- Colours: grey, white, blue, green

*(Technical data see page 4.)*

## Evaluation – short version

Test criterion	Test result	Evaluation
<b>Suitability</b>		
	for the partitioning of pens and compartments from neighbouring pens and compartments (as a non-carrying partition wall) and control aisles	

### Technology-related criteria

<b>Assembly</b>		
Installation instructions	available and helpful	○
Installation of the pen partition wall	easily able to be installed by the owner	+
Installation of the department partition wall	easily able to be installed by the owner	+
Assembly aids	no additional aids	○
<b>Handling</b>		
Handling of the pen door / lock	normal	○
Handling of the compartment door / lock	sometimes difficult	-
<b>Quality</b>		
Dimensional stability	temperature-dependent	○
Processing	good	+
<b>Durability</b>		
Stability of the panelling (new condition / weathered at -10°C)	very good	++
Resistance to biting	good	+
other wear / weathering damage	slight, remaining discolouration of the H-connection profiles in the animal area	○
<b>Cleaning, hygiene</b>		
Ease of cleaning	very good	++
Gaps / joints	none (department partition walls connected by H-profiles) U-bar (roll joint) must be sealed thoroughly	+ ○
Cavities	none, panelling closed all around	+
High-pressure cleaning resistance	Minimum distance with a flat-jet nozzle 70 mm	+
Resistance to acids	no changes	+
<b>Disposal</b>		
of the plastic panelling	traded in by the manufacturer	+
<b>Fire behaviour</b>		
	easily flammable, construction material class B2	n.e.
<b>Labelling</b>		
	Labels with all data	+
	Some labels are permanently attached	○
<b>Warranty</b>		
	2 years	○

### Animal-related criteria

<b>Animal health</b>		
injuries related to the partition wall	none	○

Evaluation scale: ++ / + / ○ / - / -- / n.e. (○ = standard, n.e. = no evaluation) – test frame from 03 April 2003

\* The panelling was installed in the winter by the Aufenacker company in an unheated old farm building.

## Test results

### Suitability

The partition wall system from Aufenacker GmbH is well suitable for the partitioning of pens and compartments (non-carrying partition walls).

### TECHNOLOGY-RELATED CRITERIA

#### Assembly

Installation instructions for the assembly of the panelling system by the owner are available.

The panelling can be completely installed by the owner. For a pen of the size 3,000 x 4,000 mm (height: 1,000 mm), an unexperienced person needs ca. 3 hours. As tools, screw clamps, screwdrivers

(13 mm), a cordless drill, a rubber hammer, a spirit level, and a strip of timber are required.

The shipment does not include any additional assembly aids as standard. Bolt size is uniform.

#### Quality

The dimensional stability of the plastic panelling is temperature-dependent. Therefore, the ambient temperatures should be sufficiently considered during installation, and expansion joints should be allowed for.

#### Handling

The handling of the partition wall system during assembly is easy. Due to the danger of deformation in the case of excessive tightening

of the bolts, appropriate washers for the angle connections should be used.

The pen door is easy to handle. The lock prevents unintentional opening by the pigs.

During the test period, the handling of the compartment door was temperature-dependent because installation had to be carried out in the winter. Here, appropriate expansion joints must be allowed for.

#### Manufacturer's statement:

The door handle set was changed. As a result, it is easier to operate. In addition, assembly is simpler and less temperature-dependent.

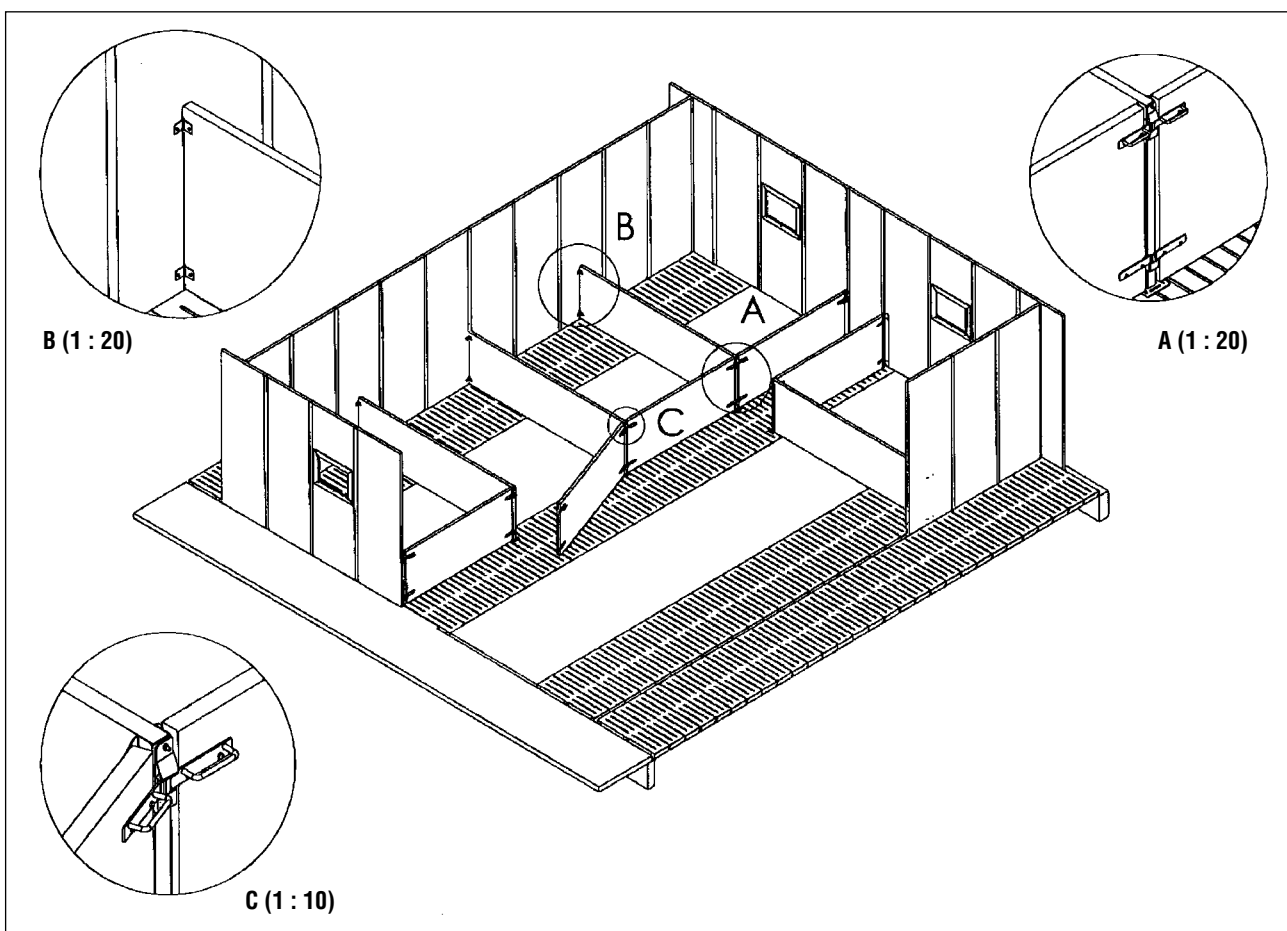


Figure 2:  
System sketch: Aufenacker plastic panelling (schematic)

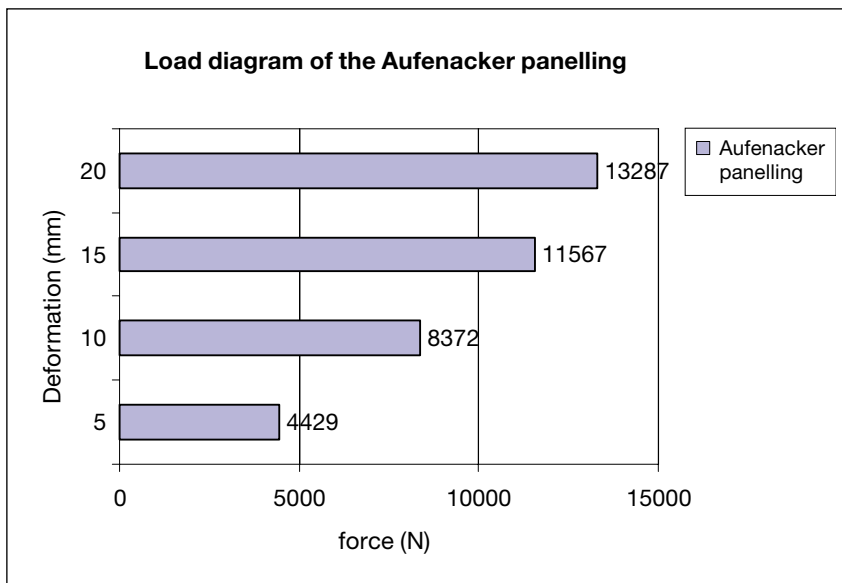


Figure 3:  
Load diagram of the Außenacker panelling under test stand conditions

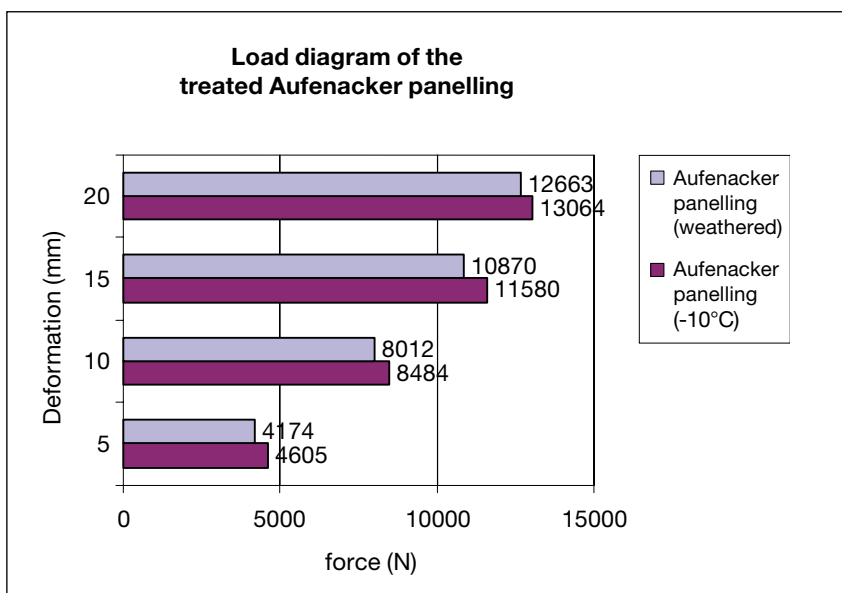


Figure 4:  
Load diagram of the treated Außenacker panelling under test stand conditions

## Durability

The shape of the individual profiles in the stall is temperature-dependent. Slight deformation was observed in some cases under practical conditions due to heavy temperature fluctuations.

If the manufacturer's instructions are observed, pipes and radiators can be installed at the compartment partition walls without any problems.

Under test stand conditions, the force required to reach expansion steps of 5, 10, 15, and 20 mm in 600 mm long plastic panels was measured. The free clamping length of the panels was 420 mm each. Pressure was exerted centrally using a stamp (diameter 25 mm, 550 mm long). The pressing speed was 50 mm/min (cf. figure 3).

The bending tests were also carried out after a panel had been cooled to -10°C and weathered for 10 months (cf. figure 4).

It was shown that stability remained unimpaired at low ambient temperatures and that only natural weathering exerted a slight influence on stability.

The deflection of the partition walls was tested with and without load. The results showed that at a 2,500 mm distance between the loads the unloaded 3,000 mm long panels exhibited a small deflection of 3 mm. Under load (50 kg), deflection is 26 mm.

## Durability and resistance to biting

The corrosion protection of the fixing material included in the shipment (accessories not tested) is unsatisfactory. In isolated cases, corrosion was discernible after short use. In order to guarantee long-term use under stall climate conditions, corrosion protection by the supplier should be improved.

The influence of listed disinfection agents as well as feed acids, ammonia solution (32%), and sulphurous acid (5-6% SO<sub>2</sub>) according to DIN 51958 did not cause any visual alterations to the plastic surface.

The discolouration of the H-profiles (PVC) in the faeces area, which occurred in practice, could not be found in the laboratory. The Außenacker company also offers H-profiles with Ca/Zn stabilizers.

The biting resistance of the panelling used is good. In practical use, no biting traces were found.

## Cleaning, hygiene

Due to the design, the cleaning and the disinfection of the Außenacker panelling is very easy. Accordingly, water consumption is low.

Thanks to the all-around closed panelling and custom manufacturing, there are no open joints. The connections between the compartment walls are covered by the

H-profiles. The slits between the U-profile and the panels should be additionally sealed.

In order to determine resistance to high-pressure cleaning (output 1,000 l/h, test pressure 140 bar, exposure period 1 minute), the minimum distance for a flat-jet nozzle (25°) was determined at which no visible alterations to the surface occur. The measured distance (70 mm) is good.

## Disposal

If sent back clean and unmixed, the plastic panelling is taken back and channeled into recycling by the Aufenacker company. After disposal, the customer receives payment for the panelling after deduction of the freight costs.

## Labelling

On a partially permanently attached sticker, the board profiles are directly labelled with the company name, the type, the date of production, and the measurements

## Warranty

The manufacturer grants the final customers the warranty period of two years required by the Product Liability Act.

## ANIMAL-RELATED CRITERIA

### Animal health

#### *Injuries caused by the partition wall*

Pig injuries caused by the partition wall system did not occur during the test.

#### *Toxicological safety*

According to the manufacturer, no materials which impair health are used for the production of the Aufenacker panelling.

### Survey result

A survey among 8 farmers who use the plastic panelling from Aufenacker GmbH largely confirms the results of the test. All those surveyed assembled the partition walls themselves. On the farms, a total of 182 m<sup>2</sup> of pen- and 1,240 m<sup>2</sup> of compartment partition walls were installed. Three farmers had problems with the fixing system during the installation, which were caused by broken H-profiles or deformed material. 50 % of the farmers surveyed found the handling of the pen- and compartment doors complicated. For the other 50 %, handling was easy. 100 % of those who participated in the survey attested to the panelling being very easy to clean (3 to 6 times per year). In 50 % of the cases, slight wear (dis-

colouration) at the surface (in particular in the faeces area) occurred after some time in use. All those surveyed said that they would purchase Aufenacker panelling again if necessary.

Manufacturer's statement: The assembly temperature of the H-click profiles should be 20°C because at lower temperatures there is a risk of fracture during assembly. Aufenacker has also developed one-part H-profiles which do not need to be assembled.

Discolouration results from the reaction of the Pb stabilizers with ammonia. Aufenacker also offers profiles with CaZn stabilizers which do not react with ammonia.

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## Description and technical data (measured values)

Component	Criterion	Data
Plastic panelling	Material / colour	HDPE / grey, white, green, blue
	Height	Custom-manufactured
	Thickness	54 mm
	Weight per m <sup>2</sup>	12.75 kg

## Testing

For testing, 15 pens were installed in three compartments of a training- and experimental institute (old buildings). On test stands, load carrying ability and deflection, weathering as well as assembly and installation were examined.

In addition, durability tests were carried out.

### Test institutes

DLG-Test Station for  
Agricultural Machinery,  
Max-Eyth-Weg 1,  
64823 Groß-Umstadt

DLG-Test Station for  
Agricultural Machinery,  
Potsdam station,  
Lerchensteig 42,  
14469 Potsdam

### Practical tests

Training- and Experimental  
Institute Neumühle,  
Münchweiler/Alsenz

### Reporting engineer

Dipl.-Ing. agr. S. Häuser,  
Groß-Umstadt

### DLG test panel

Dipl.-Ing. agr. H.-J. Lücker,  
LVA Haus Düsse

PD Dr. H-P. Schwarz,  
University of Gießen

Dipl.-Ing. agr. M. Klaßen,  
LVAV Neumühle

Dr. med. vet. H. Nienhoff,  
TGD Hannover

Dr. H-W. Klußmann,  
ITT Flygt Pumpen GmbH

Graduate farmer P. Klimmer,  
Obernburg

### DLG committee animal welfare

PD Dr. D. Hesse, VzF Uelzen

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Deutsche Landwirtschafts-  
Gesellschaft e.V.  
Prüfstelle für Landmaschinen  
Max-Eyth-Weg 1, D-64823 Groß-Umstadt  
Telefon: 0 60 78/96 35-0, Fax: 0 60 78/96 35-90  
E-Mail: Tech@DLG-Frankfurt.de  
Internet: www.dlg-test.de

Deutsche Landwirtschafts-  
Gesellschaft e.V.  
Prüfstelle für Landmaschinen  
Lerchensteig 42, D-14469 Potsdam  
Telefon: 03 31/5 67 02-0, Fax: 03 31/5 67 02-90  
E-Mail: Tech@DLG-Frankfurt.de  
Internet: www.dlg-test.de

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