BRITISH STANDARD

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12641-2:2006

Swap bodies and commercial vehicles — Tarpaulins —

Part 2: Minimum requirements for curtainsiders

The European Standard EN 12641-2:2006 has the status of a British Standard

ICS 55.180.10

National foreword

This British Standard was published by BSI. It is the UK implementation of EN 12641-2:2006.

The UK participation in its preparation was entrusted to Technical Committee TW/1, Freight containers and swap bodies.

A list of organizations represented on TW/1 can be obtained on request to its secretary.

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Caisses mobiles et véhicules utilitaires - Bâches - Partie 2 : Exigences minimales pour rideaux coulissants

Wechselbehälter und Nutzfahrzeuge - Planen - Teil 2: Mindestanforderungen an Schiebeplanen

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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 12641-2:2006) has been prepared by Technical Committee CEN/TC 119 “Swap bodies for combined transport”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by April 2007.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

EN 12641 *Swap bodies and commercial vehicles — Tarpaulins* consists of the following parts:

Part 1: Minimum requirements

Part 2: Minimum requirements for curtainsiders

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies minimum requirements for the strength and attachment of tarpaulins used on swap bodies for combined transport and may be used for other applications, e.g. commercial vehicles.

NOTE Requirements for securing of cargo are given in EN 12640 and EN 12642, option XL.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1875-3, *Rubber- or plastics-coated fabrics — Determination of tear strength — Part 3: Trapezoidal method*

EN ISO 1421, *Rubber- or plastic-coated fabrics — Determination of tensile strength and elongation at break (ISO 1421:1998)*

EN ISO 2286-2, *Rubber- or plastics-coated fabrics — Determination of roll characteristics — Part 2: Methods for determination of total mass per unit area, mass per unit area of coating and mass per unit area of substrate (ISO 2286-2:1998)*

EN ISO 2411, *Rubber- or plastics-coated fabrics — Determination of coating adhesion (ISO 2411:2000)*

EN ISO 7854, *Rubber- or plastics-coated fabrics — Determination of resistance to damage by flexing (ISO 7854:1995)*

ISO 3795, *Road vehicles, tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

3 Requirements

3.1 Basics

The following minimum requirements regarding tarpaulin design and attachment to the swap body shall be met.

3.2 Materials

The quality of the materials used shall be such that the resulting product will conform to the requirements of Table 1 and ensure uniformity of the performance.

Table 1 — Material requirements

Characteristic	Requirements	Test method according to
Breaking strength in warp and weft • at 23 °C ± 5 °C [a] • at – 25 °C [b]	 ≥ 4 000 N / 5 cm ≥ 2 700 N / 5 cm	EN ISO 1421
Resistance to tear propagation in warp and weft • at 23 °C ± 5 °C [a] • at – 25 °C [b]	 ≥ 300 N ≥ 130 N	EN 1875-3
Adhesion [c]	≥ 100 N / 5 cm	EN ISO 2411
Dimensional stability	≤ 1 %	24 h at 70 °C
Buckling strength	No cracks after 100 000 bending operations	EN ISO 7854/B
Reaction to fire	Burning rate < 100 mm/min	ISO 3795
Total mass per area	> 850 g/m²	EN ISO 2286-2

[a] i.e. room temperature.

[b] For special applications, a test temperature of –40°C may be applied, if agreed between user and supplier.

[c] EN ISO 2411 specifies the requirement for attaching a separate piece of fabric, using glue, to facilitate the test. For purposes of EN 12641-2, this attachment should be effected by the use of a welding process.

3.3 Tarpaulin reinforcements

Curtainsider tarpaulins shall be reinforced by vertical and horizontal belts. The belts shall be secured to the tarpaulin.

NOTE A suitable method of securing the belt to the tarpaulin is by welding. However, other methods may be used if they provide an equivalent performance.

The vertical and horizontal belts shall be arranged at intervals of ≤ 600 mm. The total number X of the vertical belts shall at least be equal to the arithmetic mean in accordance with the following equation:

$$X = \frac{L - 550}{550} \tag{1}$$

where

L is the length of the body; all values, in mm.

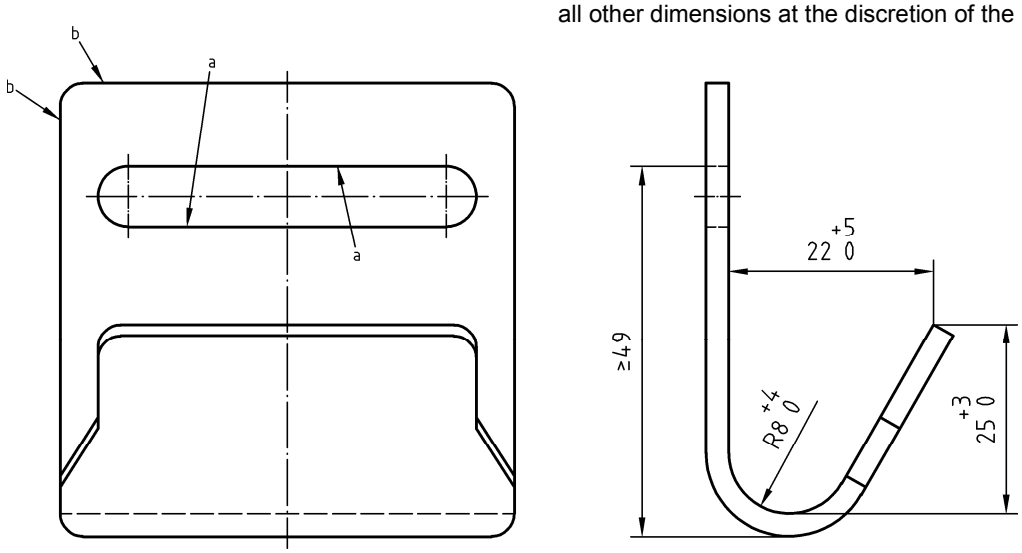
The belts shall meet the following requirements:

- vertical belts: tensile strength ≥ 23 kN;
- horizontal belts: tensile strength ≥ 12 kN.

3.4 Belt hooks

Belt hooks for tarpaulins shall be made of flat material. The belt hooks of the vertical tensioning belts shall remain in vertical position when the belt is slack and shall meet the functional dimensional requirements of Figure 1.

Dimensions in millimetres
all other dimensions at the discretion of the manufacturer



Key

a slit periphery on both sides without any burs

b periphery of outside edges without burs on both sides

Figure 1 — Functional dimensions of the belt hook

3.5 Tarpaulin sides

3.5.1 General

During transport operations the tarpaulin sides shall be tensioned both in horizontal and in vertical direction.

3.5.2 Vertical tensioning devices

The locking procedure for tensioning devices shall be clear and obvious.

The hand levers for belt tensioning shall be in positive engagement in the closed position. To release the hand lever it shall be necessary to unlock it first by actuating a separate unlocking device.

Belt tensioners which are at least equivalent in function and safety are also admissible.

The belt length between the belt hook and the upper deflection point of the belt tensioning lever should be at most 350 mm.

NOTE If the swap body is equipped with grappler plates, the value of 350 mm may be exceeded within this specific area.

Tensioners which work without belts and which are at least equivalent in function and safety are also admissible.

3.5.3 Horizontal tensioning devices

The tarpaulin sides are closed at the front and rear ends of the tarpaulin. The ends of the tarpaulin shall be framed by a rod of metal or similar material. On the swap bodies side this rod is hooked on and on the opposite end it is tensioned by means of a tensioning device. In general, horizontal tarpaulin tension is achieved by turning and thereby coiling the tarpaulin material at the tightening end.

The tensioning mechanism shall be self-locking. Alternatively, if self-locking is not provided, there shall be a different locking system for the hand lever which is secured against unintentional release and the actuation of which shall be clear and obvious.

3.5.4 Testing

3.5.4.1 General

Testing in accordance with 3.5.4.2 and 3.5.4.3 is intended to demonstrate a minimum strength of the vertical belt system. For this purpose, a segment of belt and tarpaulin of 500 mm to 600 mm in width and 2,9 m to 3,0 m in length (measured from the roller to the hooking-on point of the tarpaulin) with a tensioning device fitted at the centre shall be used.

If, in general, the lateral height of the tarpaulin is $\leq$ 2,5 m the test can be carried out with a tarpaulin that is appropriately shorter.

The top roll guide and the hooking on of the lower end of the tarpaulin shall be constructed as in the original test specimen to be used later.

The tarpaulin shall be fitted with its upper and its lower reinforcement; the horizontal reinforcements in the middle may be omitted for testing. Technically comparable test fixations are admissible.

3.5.4.2 Static test

The belt segment described under 3.5.4 shall be attached to the top roller guide of a test device and shall be submitted to a vertical test load of 4 kN.

For the whole system to set, the test load is applied for a period of 30 s after which the load is taken off and a reference zero measurement is carried out. If no damage has occurred the test load is again applied for a period of $\geq$ 5 min. After the test there shall be no permanent change in the position of any of the components > 5 mm in relation to the zero measurement nor any other alterations that would impair the function, in any of the individual components of the system.

3.5.4.3 Dynamic test

A second specimen shall be prepared as described in 3.5.4. The test apparatus shall be constructed as set out in Figure 2.

The roller of the tarpaulin to be tested is introduced into the top roller guide. At the bottom end, the belt hook is hooked on in the zero position of the eccentric tensioner and tensioned by hand. In this position, the test equipment is able to execute oscillating travel of $\pm$ 15 mm. The lower part of the tarpaulin fixation is tested as follows, using oscillations of $\pm$ 15 mm:

a) 1 min at 4 Hz, after which retension the belt and mark the position of the tensioning belt, the eccentric drive being in zero position.

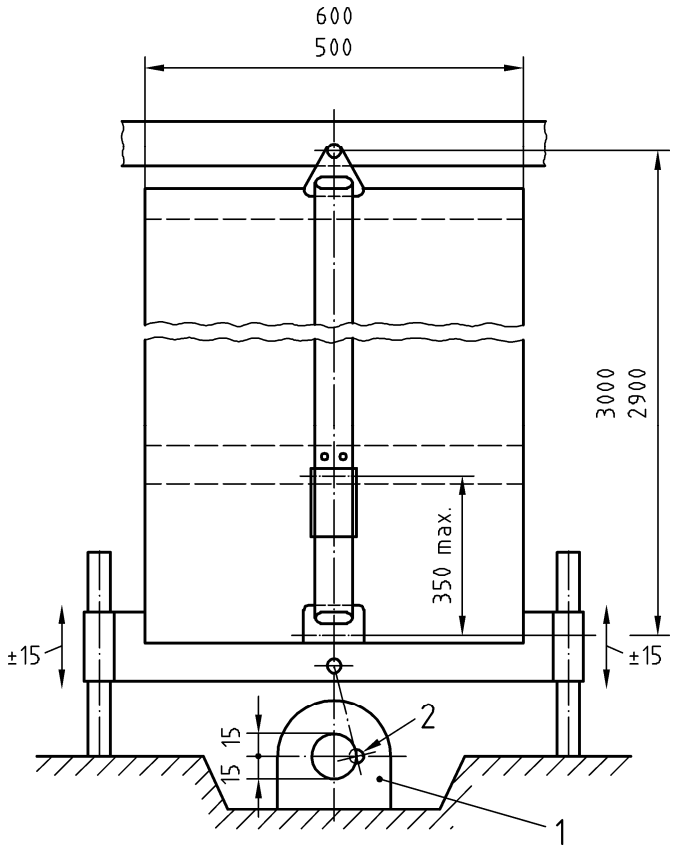
b) 2 min at 4 Hz.

c) 2 min at 12 Hz.

After the dynamic test described in a), b) and c) the following requirement shall be fulfilled with the belt hook in the zero position of the eccentric drive:

- the belt shall at least still have a slight residual tension, i.e. a slack belt is not admissible;
- the tensioning belt shall not slip through more than 5 mm on the tensioning lock.

Dimensions in millimetres



Key

1 drive approximately 4 kW

2 zero position

Figure 2 — Dynamic test configuration

4 Marking

Side curtains that fulfil the requirements of this European Standard shall be marked durably with the following information (see example in Figure 3):

— number of this European Standard, i.e. EN 12641-2;

— date of manufacture (year and month);

— name or code of the tarpaulin manufacturer;

— low-temperature resistance (i.e. –25 °C or –40°C).

Dimensions in millimetres

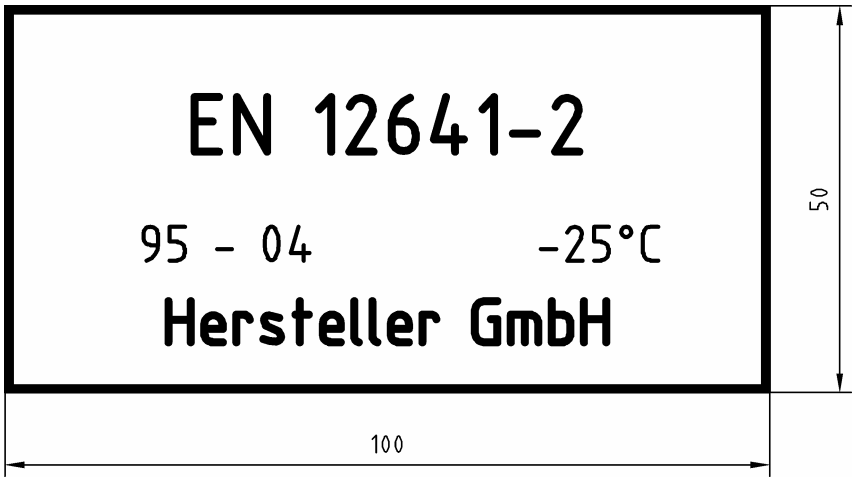


Figure 3 — Marking of tarpaulins

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[1] EN 12640, *Securing of cargo on road vehicles — Lashing points on commercial vehicles for goods transportation — Minimum requirements and testing*

[2] EN 12642, *Securing of cargo on road vehicles — Body structure of commercial vehicles — Minimum requirements*

[3] EN ISO 13937-2, *Textiles — Tear properties of fabrics — Part 2: Determination of tear force of trouser-shaped test specimens (Single tear method) (ISO 13937-2:2000)*

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