BRITISH STANDARD

BS EN 12707:2009

Plastics drums — Non-removable head (tight head) drums with a nominal capacity of 210 l and 225 l

ICS 55.140

BSI
British Standards

National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Plastics drums - Non-removable head (tight head) drums with a nominal capacity of 210 l and 225 l

Fûts en matière plastique - Fûts à ouverture partielle d'une capacité nominale de 210 l et 225 l

Kunststofffässer - Spundfässer mit einem Nennvolumen von 210 l und 225 l

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Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 12707:2009) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

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1 Scope

This European Standard specifies the characteristics and dimensions of non-removable head (tight head) plastics drums with a nominal capacity of 210 l and 225 l.

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 ISO 20848-3, *Packaging -- Plastics drums -- Part 3: Plug/bung closure systems for plastics drums with a nominal capacity of 113,6 l to 220 l (ISO 20848-3:2006)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
non-removable head (tight head) drum (TH)
flat-ended or convex-ended circular cross-section packaging with openings for filling and emptying in the head not exceeding 70 mm in diameter

3.2
nominal capacity (NC)
capacity in litres which, by convention, is used to represent a class of drums of similar brimful capacities

3.3
brimful capacity (BC)
volume of water in litres held by the drum when filled through the filling orifice to the point of overflowing

NOTE Annex A specifies the method for measuring brimful capacity.

3.4
total capacity (TC)
volume of water in litres held by the drum when filled completely, i.e. following the removal of any air trapped in the drum

NOTE Annex A specifies the method for measuring total capacity.

3.5
overall height (h_o)
height of the finished drum from the base to the highest point

NOTE See Figure 1.

3.6
overall diameter (d_o)
maximum diameter of the drum, where relevant

NOTE See Figure 1.

3.7
bung housing position (p_b)
distance from the centre of the bung housing to the outside of the drum body 50 mm vertically below the top edge of the top handling ring

NOTE See Figure 1.

3.8
drum mass
mass of the empty drum including all closures

4 Requirements

4.1 Dimensions

The dimensions and tolerances of the drum shall be as listed in Table 1 and as shown in Figure 1. The measurements shall be conducted at ambient conditions but shall not be made within 48 h of manufacture.

NOTE Apart from the dimensions specified, there are no restrictions on drum shape.

4.2 Drum mass

The mass tolerance of the drum shall be within ± 4 %.

NOTE The defined mass should be agreed between the purchaser and the supplier.

4.3 Material identification symbol

The drum shall be permanently marked with the relevant material identification symbol, i.e. the symbol identifying the material from which the drum is made.

4.4 Closures

There shall be two closures, one of which shall be either a BCS 70 x 6 or a BCS 56 x 4 nominal plug size in accordance with EN ISO 20848-3. When fitted the closures shall not protrude above the overall height of the drum.

NOTE For the purpose of transport and storage, the filled drum should be closed, using the appropriate tooling, to the manufacturer's recommended closure torque for each type of gasket.

4.5 Materials

The drum shall be manufactured either from high density polyethylene or another suitable plastics materials appropriate to the physical and chemical requirements of its intended use.

4.6 Handling

Provision shall be made to enable the drum to be mechanically handled using one or two permanently fixed handling rings. The construction of the handling rings shall be adequate for normal static and dynamic handling of filled drums.

4.7 Stacking

The drum shall be capable of being stacked with or without pallets, according to the manufacturer's recommendations.

4.8 Draining

4.8.1 The drum shall be designed so as to minimize the residual volume of liquid left in the drum after drainage. The residue shall be not more than 100 ml when tested according to **B.3** (procedure A).

4.8.2 The residue obtained when the drum is tested according to **B.4** (procedure B) is more dependent on the area and condition of the internal surface of the drum than procedure A and therefore can be in excess of that for procedure A.

NOTE The maximum permitted figure should be agreed between the purchaser and the supplier.

4.9 Finish

The external surface finish shall be suitable for the attachment of labels.

NOTE 1 The nature of the internal and external finish should be agreed between the purchaser and the supplier.

NOTE 2 The preferred colour option for the drum body is blue. The use of any other colour should be agreed between the purchaser and the supplier.

5 Designation

A non-removable head (tight head) drum (TH) manufactured in accordance with this Standard shall be designated in the following manner:

Plastics drum TH EN 12707 NC – *Nominal capacity*

EXAMPLE 1 A non-removable head (tight head) drum (TH) manufactured in accordance with this standard with a nominal capacity of 210 l or 225 l would be designated:

Plastics drum TH EN 12707 NC – 210 l to 225 l.

EXAMPLE 2 A non-removable head (tight head) drum with a nominal capacity of 225 l would be designated:

Plastics drum TH EN 12707 NC - 225 l

NOTE Where the drums are intended to be used for the transport of dangerous goods, attention is drawn to the regulatory requirements which govern the transport of those goods in the countries concerned. In Europe, depending upon the mode of transport, this means meeting the requirements of:

— European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR);

— Regulations concerning the International Carriage of Dangerous Goods by Rail (RID);

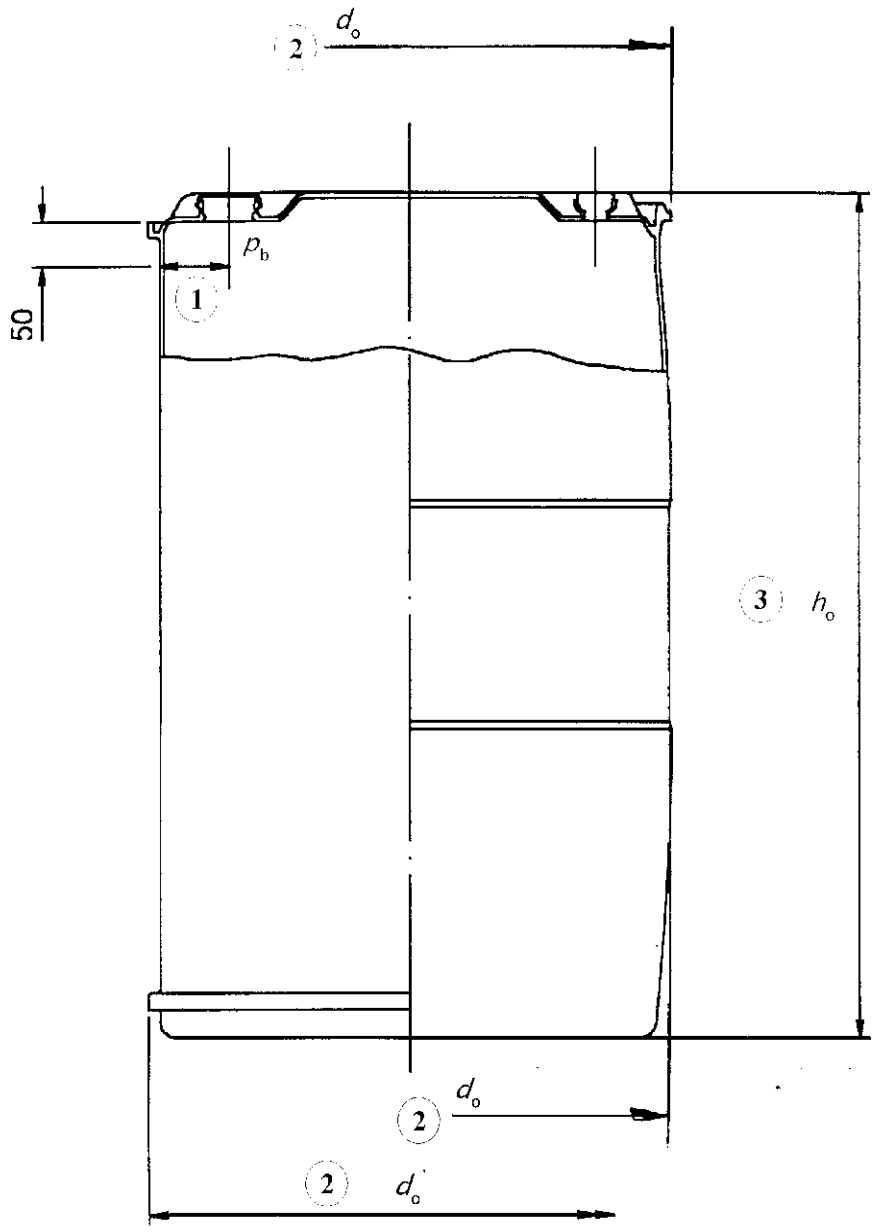
— Technical Instructions for the Safe Transport of Dangerous Goods by Air, Document 9284-AN/905 published by the Council of the International Civil Aviation Organization (ICAO);

— The International Maritime Dangerous Goods Code (IMDG-CODE) published by the International Maritime Organization (IMO).

Table 1 — Dimensions of non-removable (tight head) drums with a nominal capacity of 210 l and 225 l

Nominal capacity (NC) L	Brimful capacity (BC) l	Overall diameter (d_o) mm	Bung housing position (p_b) mm	Overall height (h_o) mm
210	213 ± 3	580 ± 5	—	928 ± 5
225	228 ± 3	582 ± 3	72 ± 2	965 ± 5
NOTE 1 The bung housing position defined in this table only applies to that housing used for filling. NOTE 2 Dimensions d_o, p_b and h_o are applicable to empty drums.				

Dimensions in mm



Key

1 bung housing position
2 overall diameter
3 overall height

Figure 1 — Non-removable head (tight head) drum with a nominal capacity of 210 l and 225 l

Annex A
(normative)

Capacity measurement method for non-removable head (tight head) plastics drums

A.1 Principle

The capacity is determined by a gravimetric method i.e. by the measurement of the mass of water in the filled drum and its conversion to a capacity. A correction factor (see EN ISO 90-2:1999, 4.1.1.) can be applied according to Table A.1, but only if the weighing scale used is of a higher precision than the correction.

NOTE For plastics drums the water temperature should not exceed 18°C.

Table A.1 — Correction factors

Water temperature °C	Correction factor (*F*)
12	1,000 5
14	1,000 8
16	1,001 1
18	1,001 4

A.2 Apparatus

Weighing scale, with an accuracy of at least 0,1% of the weight being measured.

A.3 Procedure for determination of total capacity

A.3.1 Drill a hole of diameter 5 mm to 10 mm for venting at the highest point of the closed drum.

NOTE The position of the hole depends on the profile of the top.

A.3.2 Weigh the empty drum and record its mass, m_1, in grams.

A.3.3 Measure the temperature of the tap water to be used to fill the drum.

A.3.4 Fill the drum 100 % with water through the normal filling closure with all other closures fitted and make sure that the air is vented through the drilled hole.

NOTE For certain drums, the drum needs to be inclined or tilted, so that the filling hole is at the highest position.

A.3.5 Fit and secure the drum closure and remove any surplus water from the outside.

A.3.6 Weigh the filled drum and record its mass, m_2, in grams.

A.4 Procedure for determination of brimful capacity

Follow the same procedure as for the determination of total capacity (see A.3) with the exception that no hole is drilled to vent entrapped air. Fill the drum, with the drum in the normal position for filling, until water overflows at the closure.

A.5 Expression of results

The difference between the mass of the filled drum, m_2, and the mass of the empty drum, m_1, ($m_2 - m_1$), if necessary multiplied by the correction factor (F), represents the capacity of the drum as determined by the procedure used.

Annex B
(normative)

Draining test method for non-removable head (tight head) plastics drums

B.1 Principle

The absolute drainability and the relative drainability are obtained by determining the mass of water left as a residue in the drum after drainage under gravity.

B.2 Apparatus

Weighing scale, with an accuracy of at least ± 2 g.

B.3 Determination of drainability using the top section of the drum (procedure A)

B.3.1 Cut the top off the drum.

B.3.2 Retain the top section and fit the appropriate closure(s).

B.3.3 Weigh the top section with closure(s) fitted, and record its mass, m_1, in grams.

B.3.4 Position the top section, top down, on a test rig so that it is held at the angle specified by the manufacturer (preferably 0° to 20°) with the designated closure opening at its lowest position.

B.3.5 Fill the top section with approximately 10 l of tap water.

B.3.6 Wait until the water surface has settled and then open the closure.

B.3.7 Allow the water to drain for 5 min without moving or shaking the top section and refit the closure.

B.3.8 Re-weigh the top section, still in the top down position, and record its mass, m_2, in grams.

B.4 Determination of drainability using a complete drum (procedure B)

B.4.1 Weigh the empty drum including its closure(s), and record its mass, m_1, in grams.

B.4.2 Fill the drum with a limited quantity of tap water, approximately 10 l. Close the drum.

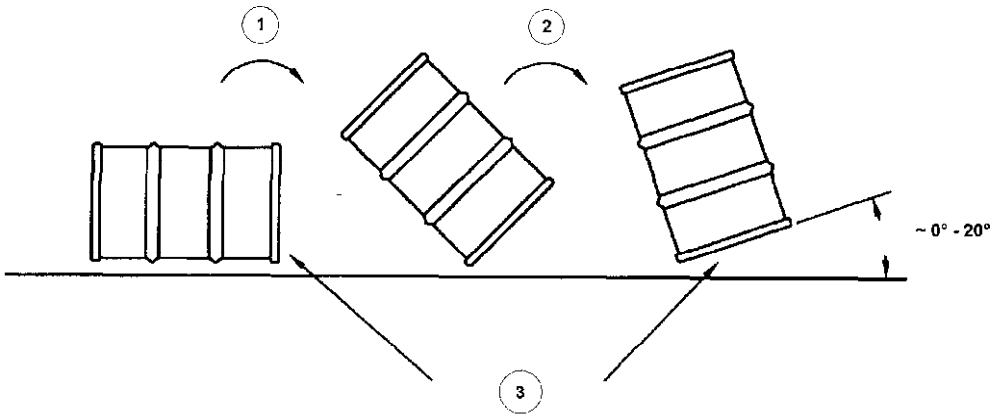
B.4.3 Rotate the drum to ensure a wetting of all inner surfaces.

B.4.4 Open the drum and place it in a horizontal position with the designated closure opening in its lowest position and leave until the liquid flow stops (position 1 as shown in Figure B.1).

B.4.5 Slowly incline the drum up to the manufacturer's recommended angle which ensures the optimal draining (preferably 0° to 20°) and leave the drum in this position for 5 min (position 2 as shown in Figure B.1), without moving or shaking the drum.

B.4.6 Fit and secure the designated closure and remove any surplus water from the outside.

B.4.7 Weigh the emptied drum and record its mass, m_2, in grams.



Key

1 Position 1
2 Position 2
3 Designated closure

Figure B.1 — Determination of drainability

B.5 Expression of results

The difference between the mass of the emptied drum, m_2, and the mass of the empty drum, m_1, (m_2 - m_1), represents the residue in the drum and is termed the absolute drainability of the drum.

The relative drainability of a drum is obtained by expressing the absolute drainability as a percentage of the total capacity.

Bibliography

[1] *European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)*, United Nations Economic Commission for Europe (UNECE)

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Headquarters 389
Chiswick High Road,
London, W4 4AL, UK
Tel +44 (0)20 8996 9001
Fax +44 (0)20 8996 7001
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