BRITISH STANDARD

BS 1133-10.3: 1990

Packaging code —

Section 10: Metal containers —

Subsection 10.3 Metal collapsible tubes

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Packaging and Freight Containers Standards Policy Committee (PKM/-) to Technical Committee PKM/561, upon which the following bodies were represented:

Engineering Equipment and Materials Users' Association

Metal Packaging Manufacturers' Association

Ministry of Defence

Paintmakers' Association of Great Britain Ltd.

This British Standard, having been prepared under the direction of the Packaging and Freight Containers Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 December 1990

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The following BSI references relate to the work on this standard:
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Amendments issued since publication

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Contents

Foreword

This Subsection of BS 1133 which has been prepared under the direction of the Packaging and Freight Containers Standards Policy Committee supersedes clauses **31** to **38** of BS 1133-10:1966. BS 1133-10:1966 is withdrawn.

BS 1133 was originally issued in December 1943, primarily to give guidance on the packaging of Service and other Government supplies. In practice, however, the code was used not only by Government departments and contractors but also by civilian packers and accordingly it was amended to suit commercial requirements.

The Parts were later issued separately and new Sections were added as necessary. Since Section 10 covers many different types of packaging it was decided to subdivide it into a number of separately published Subsections.

This Subsection, Subsection 10.3, provides information on metal collapsible tubes.

The packaging code now consists of the following Sections all of which are published separately with the exception of Sections 1 to 3 which are published in one volume.

— *Sections 1 to 3: Introduction to packaging;*

— *Section 4: Mechanical aids in package handling;*

— *Section 5: Protection against spoilage of packages and their contents by micro-organisms, insects, mites and rodents;*

— *Section 6: Temporary protection of metal surfaces against corrosion (during transport and storage);*

— *Section 7: Paper and board wrappers, bags and containers;*

— *Subsection 7.1: Wrapping papers;*

— *Subsection 7.2: Bags and envelopes;*

— *Subsection 7.3: Cartons and boxes;*

— *Subsection 7.4: Fibreboard drums;*

— *Chapter 7.5: Fibreboard cases;*

— *Subsection 7.6: Moulded pulp packaging;*

— *Subsection 7.7: Composite containers;*

— *Section 8: Wooden containers;*

— *Section 10: Metal containers;*

— *Subsection 10.1: Tins and cans;*

— *Subsection 10.2: Metal drums;*

— *Subsection 10.3: Metal collapsible tubes;*

— *Section 12: Methods of protection against shock (excluding cushioning devices);*

— *Section 13: Twines and cords for packaging;*

— *Section 14: Adhesive closing and sealing tapes;*

— *Section 15: Tensional strapping;*

— *Section 16: Adhesives for packaging;*

— *Section 18: Glass containers and closures;*

— *Subsection 18.1: Terminology;*

— *Section 19: Use of desiccants in packaging;*

— *Section 21: Regenerated cellulose film, plastics films, aluminium foil and flexible laminates;*

— *Section 22: Packaging in plastics containers.*

Section 9 *"Textile bags, sacks and wrappings"*, Section 11 *"Packaging felt"*; Section 17 *"Wicker and veneer baskets"* and Section 20 *"Packaging for air freight excluding livestock"* were withdrawn as obsolete.

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Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 4, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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1 Scope

This Subsection of BS 1133 provides basic information on the various types of metal collapsible tubes.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Subsection of BS 1133 the definitions given in BS 3130-4 apply.

3 General

In addition to essentially rigid containers such as drums, tins and cans, metal containers for packaging purposes include metal collapsible tubes. These are cylinders of pliable metal which can be sealed in such manner that their contents, although readily discharged in any desired quantity, are protected from contact with air or moisture during the whole period of use of the containers. As such, they are eminently suitable for materials in paste or semi-liquid form which need to be kept free from chemical or atmospheric contamination.

They are generally made in sizes from 10 mm diameter to 45 mm diameter in lengths up to about five or six times their diameter. Such tubes are particularly suitable for packing:

a) pharmaceutical preparations;

b) toilet preparations;

c) foodstuffs of suitable nature and consistency;

d) formulations containing volatile constituents.

4 Materials

Aluminium of 99.7 % purity is the material now employed in the manufacture of collapsible tubes. Other materials such as tin and lead were used historically but such types are no longer available.

5 Dimensions

The dimensions of the standard range of aluminium tubes are given in BS 2006 which covers tubes with normal short screwed metal nozzles.

There are many other types of nozzle which are available for specific products with special requirements. A selection of these is shown in Figure 1 and they can, together with the normal screwed nozzle, be combined with a variety of fittings and closures to satisfy specific needs.

6 Nomenclature

The nomenclature relating to metal collapsible tubes is given in Figure 2.

7 Decoration, protective coatings and identification

All collapsible tubes may be manufactured with protective coatings externally and/or internally. They may also be supplied plain or enamelled and printed to suit design requirements.

A wide range of decorative effects can be achieved but there are limitations. There is also a number of protective coatings available but these need to be related to individual products. It is necessary therefore that both user and manufacturer are involved in discussions and tests before a particular specification is selected.

For identification purposes code and batch numbers may be incorporated in the printed design. Also shoulders may be embossed or machined and moulded caps can carry a code or name. In addition many filling and closing machines can emboss the closed end with suitable batch identification numbers.

8 Closures

For short screwed necks the normal closure is a moulded plastics cap. These can be supplied with or without wads; they can be in a wide variety of shapes, sizes and colours and can be constructed with special functional features.

BS 2006 specifies appropriate internal dimensions for both hard and soft (flexible) plastics caps for the short screwed nozzles covered by this standard.

9 Filling and end sealing

A full range of filling and closing machines is available, from hand operated units to high speed fully automatic systems.

Closing is normally done by folding and crimping the end of the tube after filling. The efficiency of the crimp seal can be enhanced by using tubes supplied with a band of sealing compound applied to the inside of the open end. The selection of sealing compound should be governed by the nature of the product packed and anticipated service conditions. This, therefore, is another aspect for consultation between user and supplier.

The decorative printed design may include marks to ensure proper orientation of the crimp relative to the design on automatic filling machines.

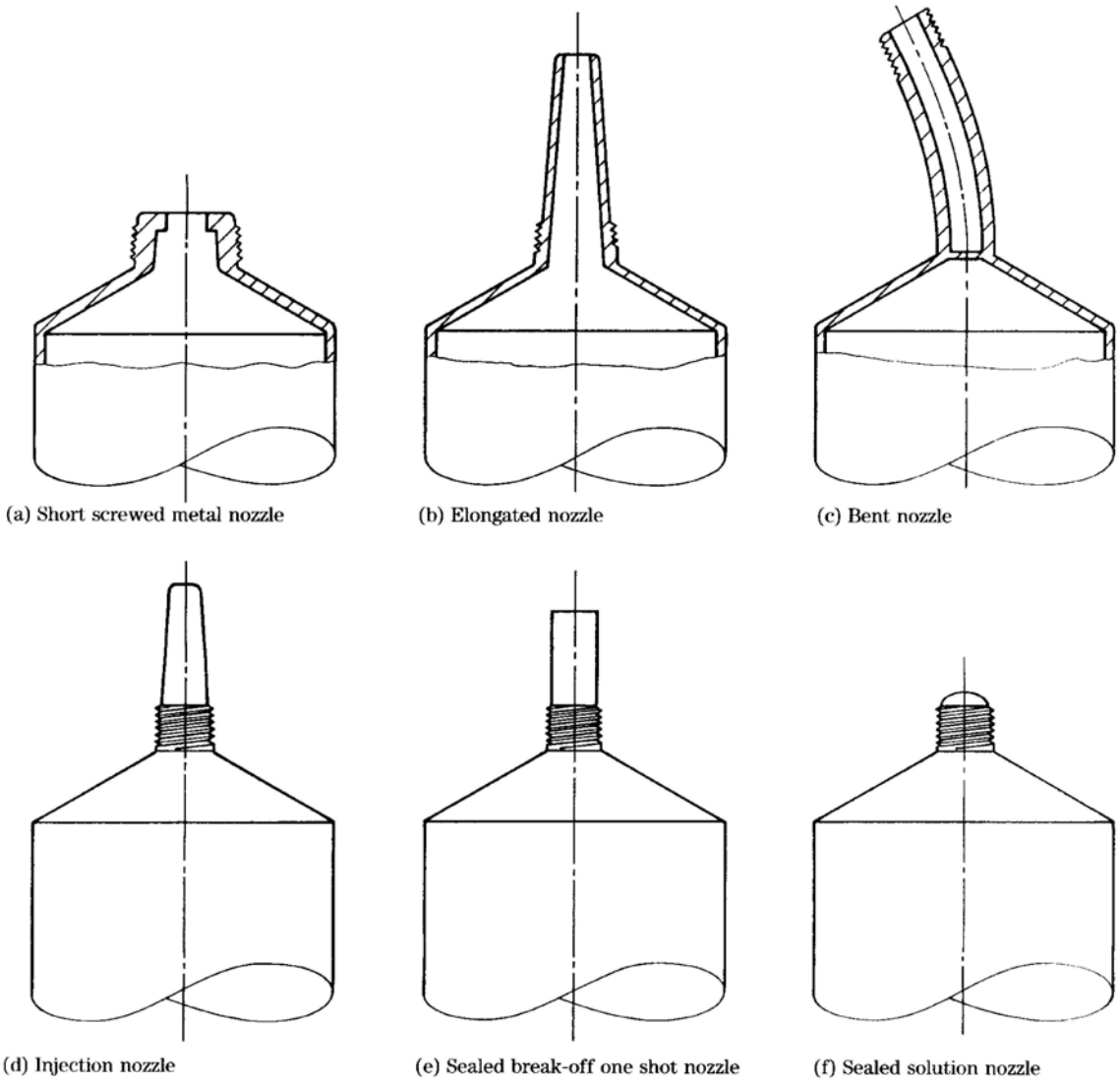

Figure 1 — Types of nozzle

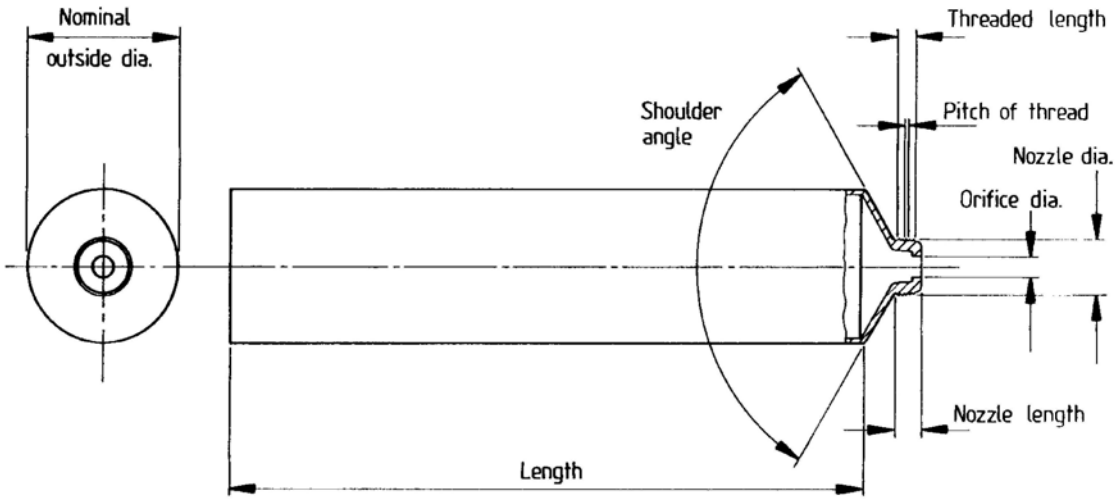

Figure 2 — Nomenclature for collapsible tubes

10 Performance

The purchaser has the responsibility for ensuring that the product is compatible with the tube specified.

To maintain a check on container performance, tests should be performed as a regular procedure, covering:

a) effectiveness of closure;

b) annealing;

c) continuity, flexibility and adhesion of internal coatings;

d) general cleanliness and freedom from metal slivers.

BS 2006 includes appropriate methods of test.

11 Packing

Before filling, collapsible tubes need to be handled with care, and tubes should be packed in such a way that the risk of physical damage and contamination with particulate matter is minimized. To reduce the risk of damage when tubes are packed in corrugated fibreboard cases, slotted interlocking partitions or cells may be used.

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Publication(s) referred to

BS 2006, *Specification for aluminium collapsible tubes.*
BS 3130, *Glossary of packaging terms.*
BS 3130-4, *Metal containers and aerosols.*

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W4 4AL