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Specification for

Heavy duty low density polyethylene sacks

Gr 6

British Standards Institution

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The following BSI references relate to the work on this standard:
Committee reference P/185. Draft for comment 70/31885

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- | | |
|--|---|
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- | | |
|--|--|
| Aluminium Federation | Plastic Films Converters Group |
| Association of British Pharmaceutical Industry | Post Office |
| British Rubber Manufacturers' Association | Tin Research Institute |
| Ministry of Agriculture, Fisheries and Food | Transparent Cellulose Wrapping Committee |
| Ministry of Defence | |

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Foreword

This British Standard has been prepared at the request of the Packaging Films Manufacturers' Association under the authority of the Packaging Standards Committee.

When used for packing of certain materials, sacks specified in this standard may be affected by the requirements of legislation, e.g. requirements for package marking or restrictions on materials in contact with food. Users of the standard are advised to check the current position regarding relevant legislation.

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

British Standard Specification for

Heavy duty low density polyethylene sacks.

1. Scope

This British Standard specifies requirements for the properties of low density* polyethylene film used in the manufacture of heavy duty low density polyethylene sacks of the 'pillow' type, i.e. non-gusseted, open top sacks. The dimensions and performance requirements of the sack are also specified.

Certain of the test methods to be used in the determination of the properties of the materials and the performance requirements of the sacks are given in Appendices A-E; other test methods are to be found in the relevant British Standards.

NOTE 1. These sacks are not intended for use for the packing of very hot or very dense materials, or storage in very strong light for long periods of time. Furthermore, this standard is intended to apply to sacks made in a variety of ways and this may result in wide variations in the values of the various properties, although these should not fall below the minima quoted in this standard. Nevertheless, there are certain correlations between the various properties. For example, a low tensile strength is often associated with a high elongation at break and vice versa, and a low impact strength with a high tear strength and vice versa.

NOTE 2. The titles of the British Standards referred to in this standard are listed on the inside back cover.

2. Definitions

For the purposes of this British Standard, the following definitions apply:

- (1) *Nominal length*. The length of the sack, either as stated by the supplier or as specified by the purchaser.
- (2) *Nominal width*. The width of the sack, either as stated by the supplier or as specified by the purchaser.
- (3) *Nominal thickness*. The thickness of film, either as stated by the supplier or as specified by the purchaser.
- (4) *Sack*. A transit container made from unsupported, single-wall polyethylene film within the following limits.

	Min.	Max.
Length (mm)	600	1500
Width (mm)	380	810
Nominal thickness (μm)	125	250
Mass of contents (kg)	25	55

- (5) *Machine direction*. The direction in the plane of a web or sheet that is parallel to the direction of flow during manufacture.

- (6) *Transverse direction*. The direction in the plane of a web or sheet that is at right angles to the direction of flow during manufacture.

- (7) *Slip*. The reciprocal of the coefficient of kinetic friction between two clean polyethylene surfaces.

3. Properties of low density polyethylene film used in sack manufacture

3.1 **Melt flow index**. The melt flow index shall be determined in accordance with BS 2782 : Method 720A and when so determined the maximum melt flow index of the polyethylene shall be 1.40.

3.2 **Density**. The density shall be determined in accordance with Method 620C or 620D of BS 2782 : Methods 620A to 620D and when so determined the maximum density of the polyethylene film shall be 0.927 g/ml.

3.3 **Colour**. The polyethylene film shall be of natural colour (essentially colourless) unless otherwise agreed between the purchaser and the supplier. Such agreements may include the incorporation of pigments, carbon black or other material such as that intended to reduce the degradation effects of ultra-violet light on the film. The sacks may also be printed as agreed between the purchaser and the supplier.

3.4 Odour.

Text deleted

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3.5 Tensile strength. The tensile strength shall be determined in accordance with the method described in Appendix A, and when so determined the minimum tensile strength in the machine direction shall be 14 MN/m² and in the transverse direction, 12 MN/m².

3.6 Elongation at break. The elongation at break shall be determined in accordance with the method described in Appendix A, and when so determined the minimum elongation at break in the machine direction shall be 350 % and in the transverse direction, 450 %.

3.7 Resistance to tear propagation. The resistance to tear propagation shall be determined in accordance with method 308B of BS 2782, 1970, and when so determined the minimum resistance to tear propagation in the machine or transverse direction shall be as shown in Table 1.

Table 1. Resistance to tear propagation

Thickness	Minimum resistance to tear propagation
µm	N
125	2.5
200	4.0
250	6.0

Values for intermediate thicknesses shall be found by interpolation.

3.8 Impact strength. The impact strength shall be determined in accordance with BS 2782 : Method 352D, and when so determined the minimum values for the impact resistance (F_{50}) shall be as shown in Table 2.

Table 2. Impact resistance

Thickness	Minimum values of impact resistance (F_{50})	
	Body of sack	Edge-folds
µm	g	g
125	275	175
200	450	275
250	600	400

Values for intermediate thicknesses shall be found by interpolation.

When testing the edge-fold, the ridge of the fold shall be placed uppermost.

3.9 Bursting strength. The bursting strength shall be determined in accordance with the method described in Appendix B, and when so determined the minimum value of mean bursting strength shall be as shown in Table 3.

Table 3. Bursting strength

Thickness	Minimum bursting strength
µm	kN/m ²
125	103
200	163
250	206

Values for intermediate thicknesses shall be found by interpolation.

3.10 Slip. Slip shall be determined in accordance with BS 2782 : Method 824A, with outer surface to outer surface, and when so determined the maximum slip value shall be 3.5.

4. Dimensions

4.1 Length. The length of the sack shall be taken to be the distance from the top to the uppermost parts of the heat seal at the bottom, i.e., the effective length, excluding the width of the heat seal and any surplus material beyond the sealed area. The tolerance on the nominal length shall be ± 15 mm.

4.2 Width. The nominal width of the sack shall be subject to a tolerance of ± 7 mm up to and including 600 mm wide and a tolerance of ± 15 mm above 600 mm wide.