SRI LANKA STANDARD 835 : 2010

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SPECIFICATION FOR
POLYETHYLENE GARBAGE BAGS
(FIRST REVISION)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard

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(First Revision)

SLS 835 : 2010
(AMD 443 Attached)

Gr. 5

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SRI LANKA.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

Sri Lanka Standard
SPECIFICATION FOR POLYETHYLENE GARBAGE BAGS
(First Revision)

FOREWORD

This Standard was approved by the Sectoral Committee on Chemicals and Polymer Technology and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2010-10-15.

This standard was first published in 1988. In this First Revision, tensile strength, elongation at break and tear resistance have been included as additional requirements for garbage bags. This specification covers different types of polyethylene available in the market such as HDPE, LLDPE, LDPE, and blends of them.

This standard is subject to the restrictions imposed under the National Environmental Act No. 47 of 1980 and the Regulations, Consumer Affairs Authority Act No.09 of 2003 and the Regulations framed thereunder.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with **SLS 102**. The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

In the preparation of this standard, the assistance derived from the following publications is gratefully acknowledged:

ASTM D 882: 2002 Standard test method for tensile properties of thin plastic sheeting
ASTM D 2582: 2005 Standard test method for puncture-propagation, tear resistance of plastic film and thin sheeting
BS EN 13 592: 2003 British standard plastic sacks for house hold waste collection-types, requirements and test methods

1 SCOPE

This specification prescribes the requirements, methods of sampling and test for polyethylene garbage bags. This specification does not cover degradable polyethylene garbage bags.

2 REFERENCES

SLS 102 Rules for rounding off numerical values
SLS 428 Random sampling methods
SLS 616 Glossary of terms for plastics
SLS 1305 Method of testing for the determination of thickness by mechanical scanning – plastics (film and sheeting)
SLS 1399 Polyethylene shopping bags

3 TERMINOLOGY

For the purpose of this specification, the definitions given in **SLS 616** and the following shall apply.

3.1 **drawtight sack :** Sack with a tie inserted in the top of the sack, allowing it to be closed and , in some cases, be carried.

3.2 **fourflap sack :** Sack with four flaps used for closure by knotting

3.3 **gusset :** Fold or series of folds inserted in the longitudinal edge of the sack

3.4 **household waste :** Non dangerous waste from household or from industrial activities or service activities, collected in the same conditions

3.5 **sack for selective waste collection SWC :** Sack used for collection of some flows of waste, separated beforehand by producers with the view of valorization or specific treatment

3.6 **standard sack :** Open mouthed sack

3.7 **strap sack :** Sack with two stripes used as ties for closure and as handles to carry the sack

3.8 **tie :** Any item incorporated by design or added, used to close the sack

NOTE : *examples include : polypropylene tape, clips and wire ties*

4 TYPES

The bags shall be of following four Types (see Appendix **B**) :

a) standard sacks
b) drawtight sacks
c) strap sacks
d) fourflap sacks

5 REQUIREMENTS

5.1 Appearance

The bags shall be reasonably free from defects such as gels, creases, streaks pinholes, particles of foreign matter, undispersed raw materials, cuts and tears that would impair the performance of the bags.

5.2 Colour and opacity

The colour and the level of opacity of the bags shall be as agreed to between the purchaser and the supplier, in accordance with Appendix **B**.

5.3 Ease of opening

The bags shall be capable of being opened readily by hand.

5.4 Material requirements

5.4.1 *Impact resistance*

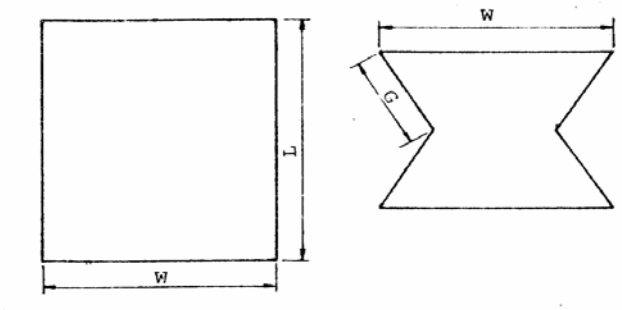
The impact resistance of a single thickness of film from bag when tested in accordance with the method prescribed in Appendix **B** of **SLS 1399 :2010** shall be not less than 45 g.

5.5 Dimensional requirements

5.5.1 The dimensions of the bags shall be as given in Table **1**.

TABLE 1 – Dimensions of bags
(see Figure 1)

SI No.	Size	Length mm	Gusset mm	Circumference mm
i)	Small (S)	600 ± 20	50 ± 5	1,000 ± 40
ii)	Medium (M)	900 ± 20	100 ± 10	1,200 ± 60
iii)	Large (L)	1,200 ± 20	150 ± 10	1,800 ± 60



L - Length of a bag
W - Bag width
G – Gusset length
Circumference = 2 W + 4 G

Figure 1 –Dimensions of bag

5.6 Performance requirements

5.6.1 *Heat seal strength*

The heat seal shall be uniformly welded with no incidence of burn through and no unsealed portions. The seal shall withstand for 10 minutes, the application of a tensile force 10N/ 5mm length of seal when tested as prescribed in Appendix **C** of **SLS 1399:2010.**

5.6.2 ***Drop resistance***

The bags shall be free from splits or tears when tested in accordance with the method prescribed in **SLS 1399 : 2010.**

5.6.3 Physical requirements

Physical requirements of the garbage bags shall be as given in Table 2.

TABLE 2 – Physical requirements

SI No	Characteristic	Requirement			Method of test
		small	medium	large	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Tensile strength, kN/m^2, min.				
	(a)Transverse direction	30×10^3	30×10^3	30×10^3	ASTM D 882
	(b)Longitudinal direction	38×10^3	38×10^3	38×10^3	
ii)	Elongation at break, per cent, min.				
	(a)Transverse direction	650	650	650	ASTM D 882
	(b)Longitudinal direction	450	450	450	
iii)	Tear resistance, N, min.				
	(a)Transverse direction	1.00	1.50	2.50	ASTM D 2582
	(b)Longitudinal direction	1.33	2.00	3.33	
iv)	Thickness, µm, min.	21	25	35	SLS 1305

6 PACKAGING

6.1 Garbage bags shall be supplied sealed in an outer packet to avoid deterioration. The number of single garbage bags in each packet shall be as agreed between the purchaser and the supplier. Packet shall consist of garbage bags of the same colour and size.

6.2 Each packet shall be in turn packed in master packs.

7 MARKING

7.1 Each packet shall have a label marked or printed legibly and indelibly with the following requirements:

a) Name of the product as garbage bags;
b) Name and address of the manufacturer including the country of origin ;
c) Brand name or trade mark if any ; (see Note)
d) Number of bags in each packet ;
e) Dimensions of a bag, in mm ;
f) Size of the bag as " small", "medium" or "large" or "S" "M" or "L" ;
g) Thickness of the film, in μm ;
h) Batch / code number ; and
j) Symbol of type of polyethylene.

NOTE : *Date of manufacture may be used as the batch no. / identification no. / code no. if one batch is manufactured during the date.*

7.2 Any other printing requirements of bags shall be as agreed to between the purchaser and manufacturer.

NOTE : *Attention is drawn to Certification Marking facilities offered by the Sri Lanka Standards Institution. See the inside back cover of the standard.*

8 SAMPLING

The method of drawing representative samples of the product for ascertaining conforming to the requirements of this specification shall be as prescribed in Appendix **A**.

9 METHOD OF TEST

Test shall be carried out in accordance with the method prescribed in **ASTM D 882, ASTM D 2582** and **SLS 1399.**

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assured based on manufacturing control system coupled with type testing and check tests or any other procedure, appropriate scheme of sampling and inspection should be adopted.

A.1 LOT

In any consignment all the polyethylene garbage bags of same type, same size and belonging to one batch of manufacture or supply shall constitute a lot.

A.2 SCALE OF SAMPLING

A.2.1 Samples shall be tested from each lot for ascertaining the conformity of bags to the requirements of this specification.

A.2.2 The number of bags to be selected from the lot shall be in accordance with column (1) and (2) of Table **3**.

TABLE 3– Scale of sampling

No. of bags in the lot (1)	No. of bags to be selected (2)	Acceptance number (3)	Sub-sample size (4)
Up to 1 200	32	3	5
1 201 to 3 200	50	5	8
3 201 to 10 000	80	7	8
10 001 to 35 000	125	10	8
35 001 to 150 000	200	14	13

A.2.3 If the bags are packed in packets, 5 per cent of packets subjected to a minimum of 5 packets shall be selected and equal number of bags shall drawn as far as possible from each packet so as to obtain the sample size as given in column (2) of Table **3**.

A.2.4 Packets and bags shall be selected at random. In order to ensure randomness of selection tables of random numbers as given in **SLS 428** shall be used.

A.3 NUMBER OF TESTS

A.3.1 Each packet selected as in **A.2.3** shall be inspected for packaging and marking requirements.

A.3.2 Each bag selected as in **A.2.2** or **A.2.3** shall be inspected for requirements given in **5.1, 5.2, 5.3** and **5.7.1.**

A.3.3 A sub-sample of size as given in column (4) of Table **3** shall be drawn from the sample selected as in **A.2.2** or **A.2.3** and each bag in the sub-sample shall be tested for the requirements given in **5.6.1** and **5.8.1**.

A.3.4 Sub-sample of size as given in column (4) of Table **3** shall be drawn from the sample selected as in **A.2.2** or **A.2.3** and each bag in the sub-sample shall be tested for the requirements given in **5.8.2**.

A.3.5 A sub sample of size as given in column (4) of Table **3** shall be drawn from the sample selected as in **A.2.2**. or **A.2.3** and each bag in the sub-sample so selected shall be tested for tensile strength and elongation at break as given in Table **2**.

A.3.6 A sub sample of size as given in column (4) of Table **3** shall be drawn from the sample selected as in **A.2.2**. or **A.2.3** and each bag in the sub-sample so selected shall be tested for thickness and tear resistant as given in Table **2**.

A.4 CRITERIA FOR CONFORMITY

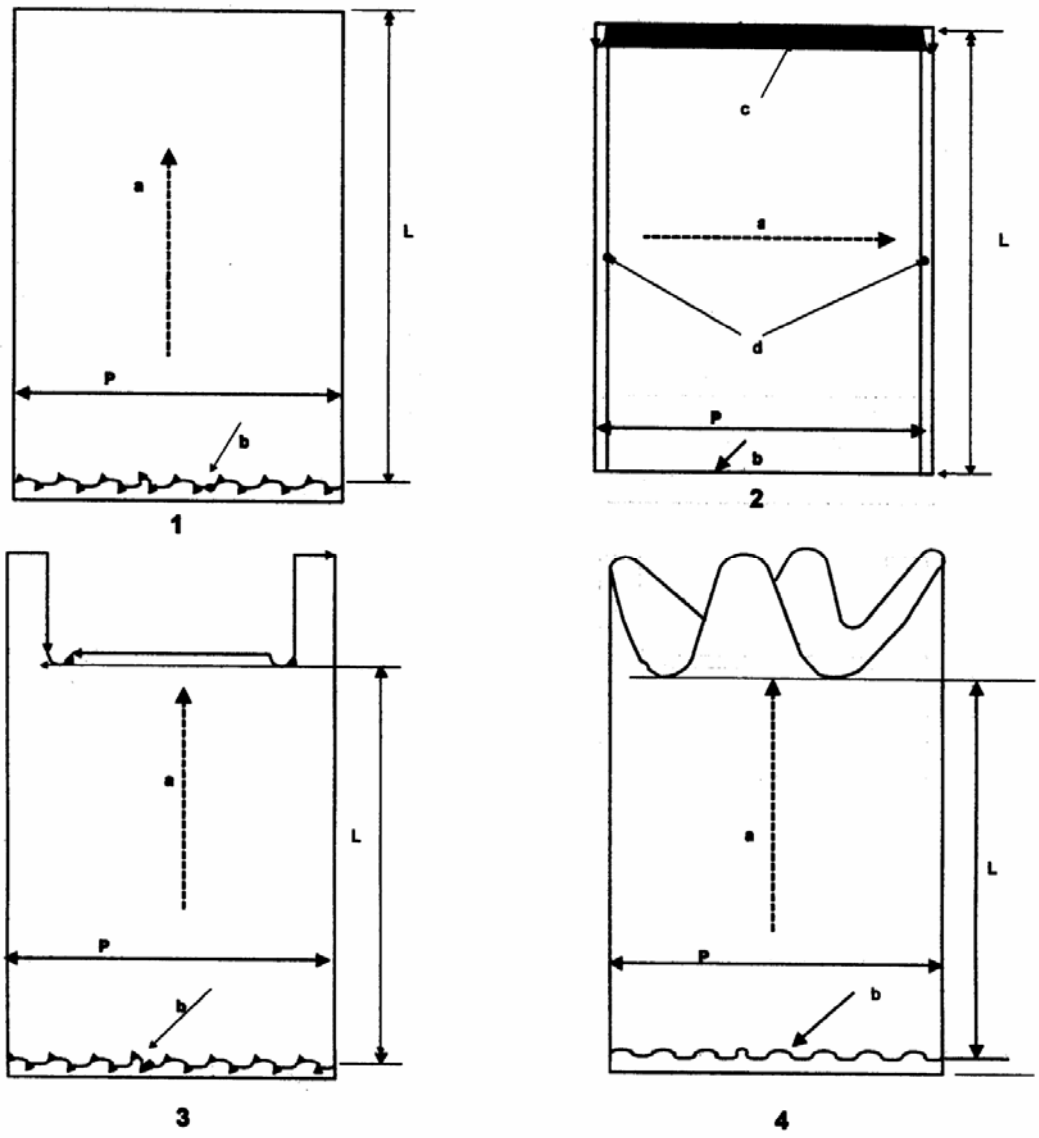
A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied.

A.4.1 Each packet inspected as in **A.3.1** satisfies the relevant requirements.

A.4.2 The number of bags not conforming to the requirements when inspected as in **A.3.2** is less than or equal to the corresponding acceptance numbers given in column (**3**) of Table **3**.

A.4.3 Each bag tested as in **A.3.3, A.3.4, A.3.5** and **A.3.6** satisfies the relevant requirements.

APPENDIX B
TYPES OF BAGS



1 Standard sack
2 Drawtight sack
3 Strap sack
4 Fourflap sack

a Direction of extrusion
b Bottom of sack
c Drawtight
d Edge seams

Amendment No: 01 approved on 2013-04-30 to SLS 835 : 2010

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(***First Revision***)

Delete the clause **5.6.2** and substitute the following ;

"**5.6.2**

The bags shall free from splits or tears when tested in accordance with the method specified in Appendix **B**."

Insert following as Appendix **B.**

" **APPENDIX B**
DROP RESISTANCE TEST

B.1 PROCEDURE

Fill three-quarter of the bag with wood shavings (density approximately 140 kg/m^3). Add water until the mass of the contents is 10 kg when testing small bags and 12 kg for medium and large bags. Exclude excess air from the bag without compressing the contents and tie the bag just above the contents with a wire. Drop the bag from a height of 1.5 m onto a flat concrete surface.

Examine the bags for splits or tears. The test is considered as pass if no splits or tears are observed."

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The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI *which includes surveillance inspection of the factory, testing of both factory and market samples.*

Further particulars of the terms and conditions of the permit may be obtained from the Sri *Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*

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SRI LANKA STANDARDS INSTITUTION

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The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

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In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

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