SRI LANKA STANDARD 234 : 2016

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SPECIFICATION FOR
BEER
(Second Revision)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard
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SLS 234 : 2016

Gr. 6

SRI LANKA STANDARDS INSTITUTION
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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 BEER
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FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2016-10-06.

This standard was first published in 1973 and was subsequently revised in 1985. In this second revision, beer types and definitions had been revised. Requirements for ethyl alcohol content and pH value had been changed to meet the market requirements. A new type of beer had been introduced to cover flavoured beer. The need was felt to specify raw materials separately as basic and optional.

This Standard is subject to the restrictions imposed under the Excise Ordinance of 2009 and the Sri Lanka Food Act No. 26 of 1980 and the regulations framed thereunder.

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

In the revision of this Standard valuable assistance derived from the publications of the Bureau of Indian Standards is gratefully acknowledged.

1 SCOPE

1.1 This Standard prescribes the requirements and methods of sampling and test for beer types which includes ale, lager, stout and flavoured beer.

1.2 This standard does not include requirements for draught beer.

2 REFERENCES

Official methods of Analysis, Association of Official Analytical Chemists (AOAC) 18th edition, 2007

SLS 102 Rules for rounding off numerical values
SLS 143 Code of practice for general principles of food hygiene
SLS 228 Glass bottles with crown finish
SLS 311 Determination of lead
SLS 312 Determination of arsenic
SLS 398 Crown closures
SLS 428 Random sampling methods
SLS 467 Code of practice for labeling of prepackaged foods
SLS 516 Methods of test for microbiology of food and animal feeding stuffs
Part 3: Horizontal method for the detection and enumeration of coliforms
Section 1: Most probable number technique

3 DEFINITIONS

For the purpose of this Standard the following definitions shall apply:

3.1 beer: Product of alcoholic fermentation by yeast of a mash of malted barley in potable water with added hops or hop concentrates, but free from hop substitutes and saponins from any source. Other fermentable carbohydrate preparations may also be added. Product may or may not be carbonated.

3.2 ale: Beer produced by top-fermentation of wort by yeast.

3.3 lager: Beer produced by bottom fermentation of wort by yeast.

3.4 stout: Very dark beers which are produced either by top or bottom fermentation by yeast.

3.5 flavoured beer: Beer produced by either top or bottom fermentation by yeast with added artificial or natural flavouring substances or combination of such substances. It may contain fruit juice, pulp, fruit extracts or spices of one or more variety.

4 TYPES

Beer shall be of the following four types:

a) Ale;
b) Lager;
c) Stout; and
d) Flavoured.

5 INGREDIENTS

All ingredients used in the preparation of the product shall be clean, wholesome and free from evidence of fungal, insect or rodent infestation and other extraneous matter.

5.1 Basic ingredients

5.2.1 *Water*

5.2.2 *Malt*

5.2.3 *Hop*

5.2 Optional ingredients

5.2.1 *Fermentable carbohydrate*

5.2.2 *Fruit pulp/ Fruit juices/ Fruit extracts*

5.2.3 *Spices*

5.2.4 *Acidulants*

Citric acid, mallic acid and/ or their sodium, potassium or calcium salts

5.2.5 F*lavouring substances*

Natural, artificial or combination of such flavouring substances

5.2.6 *Preservatives*

Preservatives used in beer shall conform to the quantities permitted under the Sri Lanka Food Act No. 26 of 1980 and the regulations framed thereunder.

6 REQUIREMENTS

6.1 Hygiene

The product shall be processed, packaged, stored and distributed under hygienic conditions as prescribed in **SLS 143**. Handling equipment such as mash tanks, fermenting tanks and conditioning and storage tanks, filters, conveyor ducts and packing equipment shall be clean.

6.2 Appearance

The product shall have the characteristic colour, bouquet of its type and it shall be free from any foreign matter.

6.3 Flavour and odour

The product shall have characteristic flavour and shall be free from off flavours. The flavoured products shall have a pleasant and characteristic flavour and odour. Flavour of the product shall be in accordance with any claims made or implied on the label.

6.4 Added colouring substances

Beer shall be free from any added artificial colouring substances except caramel produced from sugar or malt.

6.5 Pasteurization

Beer shall be effectively pasteurized.

6.6 Chemical requirements

The product shall conform to the requirements specified in Table **1**, when tested according to the methods given in Column **4** of the table.

TABLE 1 - Requirements for beer

SI No (1)	**Characteristic** (2)	**Requirement** (3)	**Method of test** (4)
i)	Ethyl alcohol content % (V/V), max	8.8 ± 0.2	Appendix **B**
ii)	pH	2.8 to 4.8	Appendix **C**

6.8 Microbiological limits

Coliform bacteria shall be absent in 1 ml of the product when tested according to the method described in **Section 1: Part 3** of **SLS 516**.

6.9 Contaminants

6.9.1 *Pesticide residues*

The product shall be prepared with special care under Good Manufacturing Practices, so that residues of those pesticides which may be required in the production, storage or processing of the raw materials or the finished food ingredient do not remain, or, if technically unavoidable, are reduced to the maximum extent possible.

6.9.2 *Heavy metals*

The product shall not exceed the limits for heavy metals when tested according to the methods given in Column **4** of Table **2**.

TABLE 2 - Limits for heavy metals

SI No (1)	**Heavy metal** (2)	**Limit** (3)	**Method of test** (4)
i)	Arsenic as As, mg/ kg, (max)	0.5	**SLS 312** or **AOAC 986.15**
ii)	Lead as Pb, mg/ kg, (max)	0.2	**SLS 311** or **AOAC 999.10**

7 PACKAGING

7.1 The product shall be filled in neutral or non-reactive containers, glass bottles, cans or in any other suitable food grade containers. The glass bottles used shall conform to **SLS 228** and also be properly sealed with gas tight crown closures conforming to **SLS 398**.

7.2 All containers shall be clean and free from chips, cracks and any other defects and appropriately sealed. All glass bottles shall be subjected to cleansing and sanitizing process before filling. Crown closures shall be lined internally with a suitable liner made of food grade material. Cans used shall be of lacquered tin plate or aluminium.

The bottles or cans shall be packed in wooden cases, wooden crates, plastic crates, metal crates, corrugated fiber boxes or any package as agreed to between the purchaser and the supplier.

8 MARKING AND/ OR LABELING

8.1 The following shall be marked or labeled legibly and indelibly on each package/ container destined to the final consumer:

a) Type of beer (In case of flavoured beer, “X – flavoured beer” where “X” denotes the type of flavor used);

b) Alcohol content % (V/V);
c) Declaration of preservatives added, if any;
d) Name and address of the manufacture and/ or distributor;
e) Brand name or trade mark, if any;
f) Batch number or code number or a decipherable code marking;
g) Net content in “ml” or “l”;
h) Complete list of ingredients, in descending order of proportions;
j) Date of manufacture;
k) Date of expiry: and
m) Country of origin, in case of imported products.

8.2 Marking and labeling shall also be in accordance with **SLS 467**.

9 SAMPLING

Representative samples of beer shall be drawn according to the method prescribed in Appendix **A**.

10 METHODS OF TEST

Tests shall be carried out as given in Appendix **B** to **C** of this standard, **Section 1: Part 3** of **SLS 516, SLS 311, SLS 312** and Official methods of Analysis, Association of Official Analytical Chemists **AOAC** methods.

11 CRITERIA FOR CONFORMITY

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

11.1 Each container examined visually as in **A.3.1** satisfies the relevant requirements.

11.2 Each container examined visually as in **A.3.2** satisfies the relevant requirements.

11.3 The volume of the contents of each container measured as in **A.3.3** does not vary by more than 1 per cent of the declared volume and the total volume of twelve containers does not vary by more than ± 0.6 per cent of the total declared value.

11.4 The contents of each container tested as in **A.3.4** for microbiological requirements satisfies the relevant limits.

11.5 The value of the expression ($\bar{x}$ - 0.6 R) calculated using test results of carbon dioxide content is greater than or equal to the limit specified.

11.6 11The values of the expressions ($\bar{x}$ - 0.6 R) and ($\bar{x}$ + 0.6 R) calculated using test results of pH value, lie between the two limits specified.

11.7 The values of the expressions ($\bar{x}$ - 0.6 R) and ($\bar{x}$ - 0.6 R) calculated using test results of ethyl alcohol content lie between the two limits specified.

11.8 The test results on the composite sample, tested as in **A.3.6** satisfy the relevant limits.

APPENDIX A
SAMPLING

A.1 LOT

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

A.2 SCALE OF SAMPLING

A.2.1 The samples shall be selected and tested for each lot separately for ascertaining their conformity to the requirements of this standard.

A.2.2 The number of containers to be selected from a lot shall be in accordance with Column **1** and Column **2** of Table **3.**

TABLE 3 - Scale of sampling

Number of containers in the lot (1)	**Number of containers to be selected** (2)	**Number of containers to be tested for microbiologica1 requirements** (3)
Up to 1 200	5	2
1 201 to 3 600	7	3
3 601 to 10 800	9	4
10 801 and above	12	5

A.2.3 In addition to the containers drawn as in **A.2.2** twelve containers shall be drawn to determine the volume of the contents of the containers.

A.2.4 If containers are packed in cases, two per cent of the cases, subject to a minimum of three cases shall be chosen first. As far as possible an equal number of containers shall be drawn from each case thus selected to form the required sample as given in Column **2** of Table **3**.

A.2.5 The cases and containers shall be selected at random. In order to ensure randomness of selection random number tables as given in **SLS 428** shall be used.

A.3 NUMBER OF TESTS

A.3.1 Each container selected as in **A.2.2** shall be examined visually for packaging and marking requirements.

A.3.2 Each container selected as in **A.2.2** shall be individually tested for requirements given in **6.2**, **6.3** and **6.4**.

A.3.3 The volume of the contents of six containers selected as in **A.2.3** shall be measured (this may be done at the place of sampling). The volume shall be measured at 27 ± 2 °C.

A.3.4 The number of containers as specified in Column **3** of Table **3** shall be drawn from the containers selected as in **A.2.2** and each container so selected shall be tested individually for the microbiological limits given in Clause **6.8**.

A.3.5 The contents of the remaining containers of the sample shall be individually tested for the requirements given below:

a) pH value; and
b) Ethyl alcohol content.

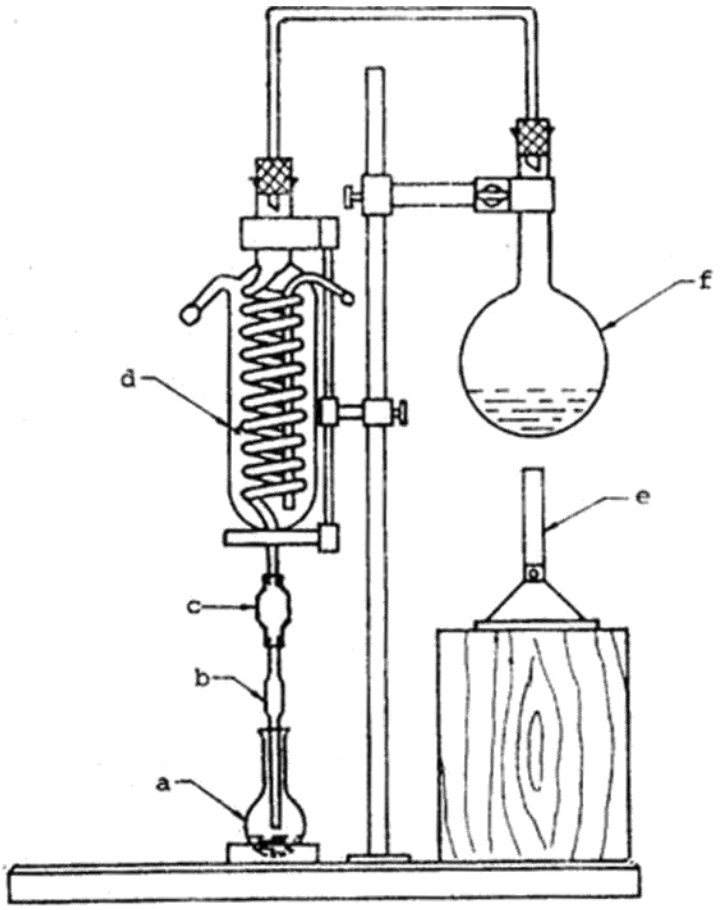
A.3.6 An equal quantity of material shall be taken from each of the container after testing for the requirements as in **A.3.5** and shall be mixed to form a composite sample and the composite sample thus obtained shall be tested for heavy metals (Table **2).**

APPENDIX B
DETERMINATION OF ETHYL ALCOHOL

B.1 SPECIFIC GRAVITY BOTTLE METHOD (REFERENCE METHOD)

B.1.1 Apparatus

B.1.1.1 Assemble the apparatus of distillation as shown in Figure **1**. The delivery end of the condenser is attached to a glass tube with a bulb by means of a ground glass joint. The lower part of this tube should reach the bottom of the receiver and dip into the minimum quantity of distilled water.



a) 100 ml receiver b) Glass tube c) Ground glass joint
e) Condenser revenue e) Bunsen burner f) Distillation flask

FIGURE 1 - Assembly of apparatus for distillation

B.1.1.2 *Specific gravity bottle, 25-ml or 50-ml capacity*

B.1.1.3 *Thermometer, 0 °C to 50 °C*
B.1.1.4 *Measuring flask, 100-ml capacity*

B.1.2 Procedure

B.1.2.1 Remove carbon dioxide by transferring the sample to the flask and shaking gently at first and then vigorously keeping the temperature at 20 °C to 25 °C.

Take 100 ml of sample into the distillation flask and add 50 ml distilled water as well as a few pieces of pumice stone. Neutralize with sodium hydroxide solution. Distil and collect the distillate in the 100-ml volumetric flask till the volume of the flask nears the mark. Allow the distillate to come to room temperature and make up the volume to 100 ml with distilled water.

B.1.2.2 Find out the specific gravity of the distillate at 27 **±** 2 °C with the help of the specific gravity bottle. Obtain corresponding alcohol content from the **AOAC 924.10**.

B.2 HYDROMETER METHOD (ROUTINE METHOD)

B.2.1 Pour the distillate obtained in **B.1.2.1** into the glass cylinder until its level is about 50 mm below the rim of the latter. Immerse the thermometer in the liquid and stir until mercury column becomes stationary. Then note the temperature. If the surface of the mercury stands between any two readings of the scale, record the nearest reading above it as the temperature of the sample.

Then withdraw the thermometer and immerse the hydrometer very slowly and allow it to float freely without touching the sides of the glass cylinder. Note down the reading, while keeping the eye on the level of the surface of liquid. If the surface of the liquid stands in between any two readings of the scale, record the nearest reading below the surface of the liquid.

B.2.2 Obtain the corresponding alcohol content by volume at 27 ± 2 °C from the Table prescribed in **B.1.2.2**.

NOTE:
Gas chromatography can be used as an alternative method to detect the ethyl alcohol content.

APPENDIX C
DETERMINATION OF pH

C.1 APPARATUS

C.1.1 *pH meter*

C.2 PROCEDURE

C.2.1 Measure the pH of an undiluted quantity of the sample with the previously standardized pH meter and electrodes.

C.3 REPORT

C.3.1 Report the pH value to the nearest 0.1.

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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 and research activity.

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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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