

SRI LANKA STANDARD 313 : PART 4 / SECTION 6 : 2010

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**METHODS FOR
ANALYSIS OF ANIMAL AND
VEGETABLE FATS AND OILS
PART 4 – DETERMINATION OF PRINCIPLE
CONSTITUENTS AND NATURAL CONSTITUENTS
Section 6 : Determination of carotene
(Second Revision)**

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard
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NATURAL CONSTITUENTS
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Sri Lanka

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Sri Lanka Standard
METHODS FOR ANALYSIS OF ANIMAL AND VEGETABLE FATS AND OILS
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FOREWORD

This Sri Lanka Standard was approved by the Sectoral Committee on Agriculture and Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2010-03-25.

This standard was first published in 1976 and subsequently revised in 1993. This standard prescribes the general methods for determining whether the material conforms to the requirements of the relevant individual standards and thus form a necessary adjunct to series of Sri Lanka Standard Specification for individual oils and fats. However, keeping in view the experience gained during the years and various International standards brought out by the International Organization for Standardization (ISO) on the subject of testing animal and vegetable fats and oils, it was decided to revise it with a view to updating the existing methods of test and by incorporating those not covered earlier.

In order to accommodate large number of test methods within the scope of one standard, this standard is published in four parts covering different characteristics as indicated below.

- Part 1 Determination of physical characteristic
- Part 2 Determination of chemical characteristics
- Part 3 Determination of foreign substances and parameters affecting quality and stability
- Part 4 Determination of principle constituents and natural constituents.

Part 4 of the standard consists of several sections.

1 SCOPE

This section prescribes a method for the determination of carotenoid content of fat.

2 FIELD OF APPLICATION

The method is applicable to vegetable oils if the greater part of their colour is due to carotenoid pigments and, in particular, to palm oil, which in the crude or unprocessed form usually contains between 300 mg/kg to 1500 mg/kg, expressed as carotene.

3 PRINCIPLE

The absorption of a solution of the fatty material in cyclohexane is measured at 445 nm. The percentage content of total carotenoids (m/m) is calculated as beta – carotene

4 APPARATUS

4.1 *Spectrophotometer*, capable of operating at 445 nm and using matched or paired parallel-sided glass or silica cells of path length above 1 cm. It is essential that the path length of the cells is accurately known.

4.2 *Volumetric flask*, 100-ml capacity

5 REAGENT

5.1 *Cyclohexane*, spectroscopic grade

6 PROCEDURE

6.1 Weigh, to the nearest milligram between 0.5 g and 1.0 g of the fat into the 100 ml volumetric flask (**4.2**). Dissolve the oil and dilute to the mark with cyclohexane (**5.1**).

6.2 Fill a 1-cm glass or silica cell with the solution of the oil and fill a second matched cell with cyclohexane (**5.1**). Obtain absorption readings in the spectrophotometer at 445 nm. If necessary, dilute the original solution to a measured volume and take further reading so that the observed absorptions are between 0.2 and 0.8 optical density.

7 EXPRESSION OF RESULTS

$$\text{Total carotenoid content of fat, as beta-carotene, in mg/kg} = \frac{383E}{Lc}$$

Where,

- E* is the observed difference in absorption between the sample solution and the cyclohexane;
L is the path length of the cell, in cm; and
c is the concentration, in g/l, of the solution used for the absorption measurement

8 TEST REPORT

8.1 The test report shall show the method used and the result obtained, indicating clearly the method of expression used. It shall also mention any operating conditions not specified in this section, or regarded as optional, as well as any incidents that may have influenced the result.

8.2 The test report shall include all the information necessary for the complete identification of the sample.

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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.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

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.