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MS 1381 (1995) (English): SPECIFICATION FOR
DESICCATED COCONUT



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MALAYSIAN **STANDARD**

MS 1381 : 1995

SPECIFICATION FOR DESICCATED COCONUT



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STANDARDS & INDUSTRIAL RESEARCH INSTITUTE OF MALAYSIA

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Committee representation

The Food and Agricultural Industry Standards Committee under whose supervision this Malaysian Standard was prepared, comprises representatives from the following Government Ministries, trade, commerce and manufacturer association and scientific and professional bodies.

Department of Agriculture

Federal Agricultural Marketing Authority

Federation of Malaysian Manufacturers

Malaysian Agricultural Research and Development Institute

Ministry of Agriculture

Malaysian Oil Palm Growers' Council

Rubber Research Institute of Malaysia

Universiti Pertanian Malaysia

The Working Group on Vegetables - Fresh and Processed which prepared this Malaysian Standard consists of the following representatives :

Encik Au How Wang (Chairman)

Federal Agricultural Marketing Authority

Puan Siti Hasidah Naim

Malaysian Agricultural Research and Development Institute

Encik Suhaimi Hamzah

Ministry of Primary Industries

Dr. Russly Abdul Rahman

Universiti Pertanian Malaysia

Encik Zainal Abidin Said

Department of Agriculture

Encik Louis Lee Yoon Sin

Ministry of Health

Dr. Mohd. Ali Abd. Rahim

Universiti Kebangsaan Malaysia

Puan Rahmah Ali

Jabatan Kimia

Encik Goh Choon Aun

Principal Crops. Sdn. Bhd.

Encik Deepak Narula

INCV Enterprise Sdn. Bhd.

Encik Chia Seng Hok/Encik Tan Wei Fat

Thai Lian Desiccated Coconuts Produce Sdn. Bhd.

Encik James Murray

Virmurco (M) Sdn. Bhd.

Puan Tan Quie Eng

Yeo Hiap Seng (M) Bhd

Puan Maziah Mukhtar

Standards and Industrial Research Institute of Malaysia

Puan Radziah Mohd. Daud (Secretary)

Standards and Industrial Research Institute of Malaysia

FOREWORD

This Malaysian Standard was prepared by the Working Group on Desiccated Coconut under the authority of the Food and Agricultural Industry Standards Committee.

It is necessary that this standard be drawn up to meet requirements of the export market.

With the assistance of this standard various quality control measures to ensure the minimum standard quality specifications can be followed by manufacturers and exporters, thereby, enhancing the quality image of the product overseas.

In the preparation of the standard specification, references were made to the following:

- (a) Indian Standard IS 966 : 1975, 'Specification for Desiccated Coconut (First revision)'.
- (b) Sri Lanka Standard SLS 98 : 1970, 'Specification for Desiccated Coconut'.
- (c) Thai Industrial Standard TIS 320-1979, 'Standard for Desiccated Coconut'.
- (d) Codex Standard for Grated Desiccated Coconut Codex Standard 177-1991.

SPECIFICATION FOR DESICCATED COCONUT

1. Scope

- 1.1 This Malaysian Standard Specification prescribes the requirements, grades and methods of sampling and testing for desiccated coconut.

2. Definition

- 2.1 For the purpose of this specification, the following definitions shall apply:

2.1.1 **Coconut** shall mean the fruit of the coconut palm, *Cocos nucifera* Linn.

2.1.2 **Kernel** shall mean that part of the fruit with the husk and shell removed, consisting of the white meat with its outer brown skin (testa).

2.1.3 **Paring** shall mean the removal of the brown skin from the kernel.

2.1.4 **Parings** shall mean the skin and the outer portions of the kernel removed during paring.

2.1.5 **Desiccated coconut** shall mean the product obtained by drying the granulated or shredded white meat of mature coconut kernel, prepared and packaged so as to be suitable for human consumption.

3. General quality requirements

- 3.1 Desiccated coconut shall be natural white, crisp and sweet having the natural taste of coconut. It shall be free from rancidity, musty or other objectionable odour, insect infestation, fungus and foreign matter.
- 3.2 The brown specks due to parings in medium and coarse grades shall under visual examination not exceed 10 particles per 100 g taken at random, when determined by the method prescribed in Appendix A.
- 3.3 The product shall also comply with the requirements stated in Table 1.

4. Grading

- 4.1 The product shall be of medium and fine grades. The grading shall be carried out by mechanical sifting as specified in Appendix E.

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4.2 The sieve analysis by weight for different grades shall be as stated in Table 2.

Table 1. Requirements of desiccated coconut

Item	Characteristics	Requirements	Method of test (Appendix)
1.	Moisture content, max, % by weight	3	B
2.	Oil content, min, % by weight	60	C
3.	Free fatty acid as lauric acid, max, % by weight of extracted oil	0.3	*
4.	Salmonella, count per 50 g sample, maximum	nil	D
5.	Coliform count per g, maximum	10	D

* MS 252 : Part 10, 'Animal and vegetable fats and oils : Part 10 : Determination of acid value and acidity (First revision)'.

Table 2. Grades of desiccated coconut

Grade	Nominal width of aperture of test sieve (mm)	BS mesh number	Percentage retained
Medium	2.80	6	Not more than 5%
	1.00	16	Not less than 80%
Fine	1.68	10	Not more than 10%
	1.40	12	Not more than 20%

5. Hygiene

5.1 The product shall be processed and packed under hygienic conditions in premises licensed in accordance with the public health legislations currently in force in Malaysia.

6. Packing and marking

6.1 Packing

6.1.1 The product shall be packed in a clean, suitable, strong, durable, appropriately sealed packaging and shall also be free from undesirable odour.

6.2 Marking

6.2.1 Each container shall be marked legibly and indelibly or a label shall be attached to the container, with the following information :

- (a) name of the product;
- (b) grade;
- (c) net weight;
- (d) code or manufacturing date;
- (e) name of manufacturer or factory or trade-mark or name of packer or distributor;
- (f) country of origin.

6.3 Each container may, by arrangement with the Standards and Industrial Research Institute of Malaysia be marked with the Certification Mark of SIRIM, provided the product conforms to the requirements of this Malaysian Standard.

7. Sampling

7.1 The method of sampling shall be as agreed upon between SIRIM and the manufacturer.

8. Method of test

8.1 The product shall conform to the requirements of this Malaysian Standard when tested in accordance with the appendices stated in the standard.

9. Legal requirement

9.1 The product shall in all other aspects shall comply with the requirements of the legislations currently in force in Malaysia.

10. Compliance to the standard

10.1 If, on testing, each of the sample is found to conform to the requirements specified in this standard, the lot, batch or consignment from which the samples have been drawn shall be deemed to comply with this standard.

Appendix A

Determination of parings

A1. Preparation of test samples

- A1.1** With a spoon, take approximately equal quantity of the material from each of the selected container till the quantity collected is at least 500 g. Mix together in an air-tight container and kept at 5 - 10°C.

A2. Procedure

- A2.1** Weigh accurately 100 g of the sample obtained in A1.1 and remove all the parings.

A3. Expression of results

- A3.1** Express the result as the number of particles per 100 g of sample.

Appendix B

Determination of moisture

B1. Preparation of sample

B1.1 Prepare the test sample as specified in A1.1.

B2. Apparatus

B2.1 Suitable weighing balance

B2.2 Electrical oven equipped with thermostat.

B2.3 Desiccator with an efficient desiccant.

B3. Procedure

B3.1 Weigh accurately about 5 g of the sample in a dried and weighed aluminium container provided with a slightly fitting lid. Heat the uncovered dish with its lid in an electrical oven at $100 \pm 2^\circ\text{C}$ for 2 h. Remove the container from the oven and immediately cover it. Cool the container in the desiccator and weigh. Repeat this process of heating for 1 h, cooling and weighing till the difference in weight between two successive weighings is less than 1 mg.

B4. Calculation

B4.1 Moisture content, percent by weight =
$$\frac{100 (W_1 - W_2)}{W_1 - W}$$

where,

W_1 is the weight in g of the container with the sample before drying;

W_2 is the weight in g of the container with the sample after drying;

W is the weight in g of the empty container.

Appendix C

Determination of oil content

C1. Prepare of sample

C1.1 Prepare the test sample as specified in A1.1.

C2. Apparatus

C2.1 Soxhlet extraction apparatus with a suitable thimble for containing 10 g of sample or other suitable extraction apparatus.

C2.2 Water- bath

C2.3 Mortar

C3. Reagent

C3.1 Petroleum ether B.P. 40°C - 60°C.

C4. Procedure

C4.1 Weigh accurately about 10 g of sample dried by the method described in C3.1 in a suitable thimble. Place the thimble in the Soxhlet extraction which has a weighed flask placing under or in other suitable apparatus. Extract with petroleum ether for 6 h. Remove the thimble from the extractor and dry it at maximum 100°C. Transfer the contents to a glass mortar and grind as finely as possible. Return the ground material to the thimble, washing out the mortar with petroleum ether and adding to the extractor. Repeat the extraction with petroleum ether for 2 h. Evaporate off the solvent on water bath to remove last traces of the solvent. Dry the oil in an oven at 100 - 120°C for 30 mins. Cool in a desiccator and weigh. Repeat this process of heating and cooling for 30 mins until the difference in weight between two successive weighings is less than 1 mg. Record the lowest weight.

C5. Calculation

C5.1 Oil content, percent by weight =
$$\frac{100 (W_1 - W_2)}{W}$$

where,

W_1 is the weight in g of the Soxhlet flask with the extracted oil;

W_2 is the weight in g of the empty Soxhlet flask

W is the weight in g of the dry sample taken for the test.

Appendix D

Determination of salmonella and coliform

D1. Preparation of test sample

- D1.1** With a pasteurized spoon take approximately equal quantity of the material from each of the selected container till the quantity collected is at least 500g. Mix together in a pasteurized, air-tight container and kept at 5-10°C.

D2. Apparatus

- D2.1** Incubator
- D2.2** Petri-dishes
- D2.3** Test tubes
- D2.4** Blender
- D2.5** pH meter
- D2.6** Pipette
- D2.7** Loop and needle
- D2.8** Autoclave
- D2.9** Weighing balance

D3. Broth and reagents

- D3.1** Lactose broth
- D3.2** Tergitol anionic 7
- D3.3** Tetrathionate brilliant green broth
- D3.4** Selenite cystine broth
- D3.5** Brilliant green sulfadiazine agar
- D3.6** Salmonella shigella agar

- D3.7 Bismuth sulphite agar
- D3.8 Triple sugar iron agar
- D3.9 Lysine iron agar
- D3.10 Violet red bile agar or desoxy cholate agar
- D3.11 1 M of sodium hydroxide solution of hydrochloric acid.

D4. Analysis of salmonella

- D4.1 Weigh accurately about 50 g of sample and blend in a blender with 450 ml of lactose broth for 1 min.

Adjust the pH to 6.8 ± 0.2 by adding 1 M of sodium hydroxide solution or 1 M of hydrochloric acid.

- D4.2 Add 2.75 ml of tergitol anionic 7 and finely grind in a blender for 2 minutes, the lid shall be slightly opened.
- D4.3 Incubate the mixture at $35 - 37^{\circ}\text{C}$ for 48 ± 3 h.
- D4.4 Prepare 2 test tubes with screw stoppers, one containing 10 ml of tetrathionate brilliant green broth and the other containing 10 ml of selenite cystine broth. Pipette one at a time 1 ml incubated sample those 2 test tubes for 24 ± 2 h.
- D4.5 After the incubation, streak a loopful of tetrathionate brilliant green broth on each petri dish of dry brilliant green sulfadiazine agar, salmonella shigella agar and bismuth sulphite agar in a manner to obtain well isolated colonies, streaking for three times on each agar. Repeat the above process with selenite cystine broth.
- D4.6 Keep three petri dish (as Clause E4.5) in the incubator at $35 - 37^{\circ}\text{C}$ for 24 ± 2 h. In case of no colony occurs, incubate the petri dishes for another 24 h.
- D4.7 The colony occurred from *salmonella* on brilliant green sulfadiazine agar, shall be pale pink to dark red or colourless, translucent or opaque.

The colony occurred from salmonella shigella agar shall be pale pink or colourless, translucent or opaque or black in the middle. The colony occurred from bismuth sulphite agar shall be black to black brown usually accompanied with metallic sheen or sometimes green. Find the colonies suspected to be *salmonella* on brilliant green sulfadiazine agar, salmonella shigella agar and bismuth sulphite agar, then inoculate the culture into triple sugar iron agar slants and lysine iron agar slants, making both a streak and stab inoculation.

- D4.8 Keep the 2 test tubes in incubator at $35 - 37^{\circ}\text{C}$ for 24 ± 2 h.

D4.9 The *salmonella* occurred on triple sugar iron agar slants shall be red on the surface and yellow at the bottom of the test tube perhaps with black colour occurred from hydrogen sulphide.

D4.10 The *salmonella* occurred on lysine iron agar slants shall be violet both on the surface and at the bottom of the test tube accompanied with black colour occurred from hydrogen sulphide. Stab the *salmonella* on the lysine iron agar slant and stab into triple sugar iron agar slant. Keep the test tube in incubator at $35 - 37^{\circ}\text{C}$ for 24 ± 2 h. Note the confirm test.

D4.11 Test method for coliform

D4.11.1 Pipette 1 ml of each subjected sample of Clause E4.2 to three petri dishes.

Pour 15 - 20 ml of violet red bile agar to each petri dish, mix thoroughly and then allow to solidify. Repour 3 - 4 ml of violet red bile agar into each petri dish and allow to solidify again, invert the petri dishes and incubate at $37 \pm 1^{\circ}\text{C}$ for 18 - 24 h. In case of using the violet red bile agar, the coliform shall give the opaque red violet colony of at least 0.5 mm in diameter and shall also give reddish zone of precipitated bile. The number of coliform occurred shall be not more than 1.

Appendix E

Determination of particle size

E1. Preparation of test sample

E1.1 Prepare the test sample as specified in A1.1.

E2. Apparatus

E2.1 Standard test sieves

E2.2 Mechanical shaker

E2.3 Weighing balance

E3. Procedure

E3.1 Weigh accurately about 100 g of the material into the upper sieve of which the aperture is wider. Fit the upper sieve with the cover, place the rest of sieves in a mechanical shaker and sieve the material continuously for 5 mins. Then weigh the remainder on each sieve.

E4. Calculation

E4.1 Material retained on each sieve, percent by weight = $\frac{100 W_1}{W}$

where,

W_1 is the weight in g of the material retained.

W is the weight in g of the material taken for the test.

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40911 Shah Alam,
Selangor .



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40911 Shah Alam,
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