DJS 360: 202X
ICS 67.080.20

Draft Jamaican Standard

Specification

for

Processed foods - ketchup

BUREAU OF STANDARDS JAMAICA

COMMENT PERIOD: JANUARY 12, 2022 TO MARCH 14, 2022

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Jamaican Standards establish requirements in relation to commodities, processes and practices, but do not purport to include all the necessary provisions of a contract.

The attention of those using this specification is called to the necessity of complying with any relevant legislation.

Amendments

No.	Date of Issue	Remarks	Entered by and date

Table of Contents

National Foreword

This document stipulates general and detailed requirements not only for traditional ketchup made from tomato, but also for ketchup made from other fruits and vegetables. This standard is intended toapply to products labelled as "ketchup" made from tomato or from other fruits and/or vegetables, and offered for direct consumption. This standard is a modified adoption to CRS 28: 2012 CARICOM Standard Specification for Processed Foods – Ketchup.

Regional territories are mandated to adopt approved CARICOM Standards.

This standard is compulsory.

Committee Representation

Acknowledgement

Acknowledgement is made to CROSQ for permission for the modified adoption of CRS 28: 2012

Related Documents

In formulating this standard considerable assistance was derived from the following:

Bureau of Standards Jamaica	
JS 88: 1984-	Jamaican Standard Specification for Ketchup
JS 328: 2014-	Jamaican Standard Specification for food grade acetic acid (Diluted)
JS 75: 2014-	Jamaican Standard Specification for Vinegar
United States Department of Agriculture	United States Standards for grades of Tomato Catsup
United States Food and Drug Administration	Defect levels handbook

1 Scope

This document specifies the requirements for ketchup, catsup, catchup hereinafter referred to as ketchup.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. Forundated references, the latest edition of the referenced document (including any amendments) applies

CARICOM Regional Organisation for Standards and Quality (CROSQ)

JS CRS 5 Jamaican Standard Specification for Labelling of Pre-Packaged Food

JS 36 Specification for Processed food (General)

International Organization for Standardization (ISO)

ISO 2859 Sampling procedures and tables for inspection by attributes

3 Terms and definitions

For the purposes of this document the following terms and definitions apply.

3.1
acetic acid (food grade) diluted
product made from materials of non- agricultural origin consisting mainly of acetic acid and water

3.2
colour
colour, flavour and odour shall be characteristic of the type of fruit or vegetable used.

3.3
consistency
ability of the product to hold its liquid portion in suspension

3.5
defects
a shortcoming, fault, or imperfection

3.5.1
absence of defects
degree of freedom from defects

EXAMPLE Defects such as seeds, peel, core material, dark specks

NOTE This can be evaluated by observing a thin layer of the product on a smooth, white, flat surface

3.5.2
fairly free from defects
any defects present may be noticeable, but not so large or so numerous or of such contrasting colour as to seriously affect the appearance or eating

quality of the product

3.5.3
practically free from defects
any defects present only slightly affect the appearance or eating quality of the product

3.6
finish
textural characteristics of the product

3.6.1
good finish
product has a uniform smooth texture

3.6
flavour
taste and olfactory sensory attributes of the product

3.6.1
fairly good flavour
flavour characteristic of the ingredients in which there may be slight traces of undesirable flavour, butis free from objectionable or off-flavours of any kind

3.6.2
good flavour
product has a pleasant, distinct characteristic flavour reflecting the use of good quality ingredients freefrom scorching of any kind
NOTE Undesirable flavour includes scorched or bitter taste.

3.7
ketchup
spiced sauce prepared from sound mature fruits or vegetable, heat treated, intended to be used primarily as a condiment to impart flavour or relish to other foods and which gets its name from the base fruit or vegetable that it contains.

3.8
thickening agent
substance which increases the viscosity of a liquid/solid mixture without substantially modifying thephysical and chemical properties

4 Product description

Ketchup shall be the heat-treated product prepared from the juice, paste, puree or any combination of these using clean, sound, ripe tomatoes or alternatively, vegetables or fruits to which been added salt, vinegar and or acetic acid. A sweetening agent, stabilizer, thickening agent, colour, antimicrobial chemical additive, antioxidant, spices, onions, garlic and other seasoningmay be added.

5 General requirements

5.1 Ingredients

5.1.1 All ingredients shall be clean, sound, wholesome, of food-grade quality and safe for human consumption.

5.1.2 Sweetening agent(s) shall be natural and or artificial. The type used shall be reflected in theingredient listings.

5.1.3 Food colouring or thickener may be added, except where prohibited by law in the country oforigin, provided that products containing colouring or a thickener shall not be given a grade higher than 'standard' regardless of the total score.

5.1.4 Additives shall be used in accordance with JS CODEX STAN 192 Jamaican Standard General Standard for Food Additives, and shall not be used at levels which are deleterious to human health.

5.2 Processing and packaging

5.2.1 The ketchup shall be heat processed in accordance with Good Manufacturing Practices; before or after packing in hermetically sealed containers, to assure preservation through the removal of microbiological hazards and the retention of its physical and chemical attributes. Products covered by the provisions of this standard shall be prepared and handled in accordance with the appropriate sections of JS 36 Specification for Processed food (General).

5.2.2 The ketchup shall occupy not less than 90 % of the total capacity of the container.

5.2.3 Only packaging materials, which are not likely to impair the organoleptic or chemical characteristics of the ketchup or make them harmful to health, shall be used.

5.3 Labelling

This product shall be labelled in accordance with JS CRS 5 Jamaican Standard Specification for Labelling of pre-packaged foods

6 Classification

6.1 Types

6.1.1 Type 1 - Tomato ketchup

Tomato ketchup shall contain no fruit or vegetable material other than tomato or tomato products except onion, garlic or other spices which may be added for flavouring purposes.

6.1.2 Type 2 - Naming the vegetable(s) ketchup

"Naming the vegetable(s)" ketchup shall be prepared from vegetable material other than tomato butmay contain tomato products as one of its ingredients.

6.1.3 Type 3 - Naming the fruit(s) ketchup

"Naming the fruit(s)" ketchup shall be prepared from fruit material but may contain tomato products as one of its ingredients.

6.1.4 Type 4 – Combination Ketchup

Type 4 ketchup shall be prepared from a combination of tomato or tomatoproducts and or vegetable material and or fruit material.

6.1.5 Type 5 - Hot Ketchup

If *Capsicum spp* is added to type 1, type 2, type 3, or type 4 ketchup, the product shall be described as "Hot" Tomato or the name of the vegetable or fruit ketchup.

6.2 Grades

6.2.1 Where a grade is declared it shall be „Fancy Grade", Choice Grade" or „Standard Grade" asspecified by 7.2.

6.2.2 Where no declaration is made, the product shall be a grade which is not less than that specified for 'Standard Grade'.

7 Detailed requirements

7.1 Analytical requirements

The finished product shall meet the following analytical requirements:

a) *Total Solids*. The product shall have a total solid content of not less than 25 %.

b) *Acidity.* Acidity shall not be less than 1.2 % of acid expressed as acetic acid by weight.

c) *pH value*. The pH value shall not be greater than 4.0.

7.2 Grades

Ketchup shall be of the following grades:

7.2.1 'Fancy Grade'

Fancy grade shall be the quality of ketchup that meets the followingrequirements:

a) has a total solids content of not less than 33 % by weight;

b) possesses a good finish;

c) has a colour characteristic of the type of ketchup;

d) is of a good consistency such that it satisfies the following:

1) shows only a slight separation of the liquid when poured on a smooth, white flat tray;

2) flows no more than 7.5 cm in 30 s at 25 □C in the Bostwick consistometer.

e) has a good flavour characteristic of the type of ketchup;

f) is practically free from defects.

7.2.2 'Choice Grade'

Choice grade shall be the quality of ketchup that meets the following requirements:

a) has a total solids content of not less than 29 % by weight;

b) possesses a good finish;

c) has colour characteristic of the type of ketchup;

d) is of good consistency such that it satisfies the following:

1) shows only a slight separation of the liquid when poured on a smooth, white flat tray;

2) flows no more than 7.5 cm in 30 s at 25 °C in the Bostwick consistometer.

e) has a good flavour characteristic of the type of ketchup;

f) is practically free from defects.

7.2.3 'Standard Grade'

Standard grade shall be the quality of ketchup that meets the followingrequirements:

a) has a total solid content of not less than 25 % by weight;

b) possesses a good finish;

c) has a colour characteristic of the type of ketchup;

d) Is of a fairly good consistency such that it satisfies the following:

1) may show a noticeable but not excessive separation of free liquid when poured on a smooth, white, flat tray;

2) flows not more than 9 cm in 30 s at 25 °C in the Bostwick consistometer.

e) has a fairly good flavour

f) is fairly free from defects

NOTE 1 Where national legislation specifies premium grade, this shall be equivalent to Fancy Grade

NOTE 2 Where national legislation exists the grades of ketchup shall be classified in accordance withthe minimum percentage of vegetable solids in the ketchup as specified.in the legislation.

8 Hygiene and Sanitation requirements

The requirements contained in JS 36 Specification for Processed food (General) shall apply.

9 Microbiological and microanalytical requirements

9.1 The mould count for ketchup shall not exceed 40% positive fields when tested in accordance withAnnex D.

9.2 Yeast cells shall be non-viable.

9.3 The ketchup shall be free of insects, insect parts, excreta; no more than 40 *Drosophila* fly eggs or 20 *Drosophila* fly eggs and 4 larvae per 200 g shall be allowed. The ketchup shall be free fromforeign matter.

9.4 The ketchup shall be free from chemical hazards, physical hazards and extraneous matter such ashuman hair or other material which would make the product unfit for human consumption be indicative of poor manufacturing practices.

9.5 There shall not be more than 500 microscopic carbonized particles per 200 g.

NOTE For additional information on microbiological tests see Annex D.

10 Sampling, grading and testing

Ketchup shall be sampled, graded and tested according to the procedures

outlined in the following:

Annex A Plan for sampling of ketchup

Annex B Determination of total solids content

Annex C Determination of sodium chloride content

Annex D Microbiological test methods for ketchup

Annex A
(normative)
Plan for sampling of Ketchup

A.1.1 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature

A.1.2 The manufacturer shall have an internal documented sampling procedure which shall be used during the production process as a means of verifying the production protocols.

A.2 Scale of sampling

A.2.1 In any consignment, all containers of the same size containing material of the same type, and grade shall constitute a lot. Samples shall be tested from each lot for ascertaining conformity of the material to the requirements of this standard.

A.2.2 Samples shall be selected at random from the lot as described in A.2.3. The total number of units to be taken is determined by the amount needed for grading, analytical tests and microbiologicaltests.

A.2.3 In order to ensure randomness of selection, random number tables shall be used. In case such tables are not available, the following procedure may be adopted:

Starting from any container, count them as 1, 2, 3 ....r and so on in a systematic manner. Every r th container thus counted shall be withdrawn, r being the integral part of N/n where N is the total number of containers in the lot and n the number containers to be selected, until the requisite number is obtained.

A.3 Samples for grading

Samples for grading shall be taken randomly from the lot under consideration in accordance with table A.1.

Table 1 — Sampling for grading of ketchup

Size of container	Lot Size	Sample Size	Acceptance no.
Any type of container of 340.95 mL (12 fl oz)	0-5000 5001-10 000	3 6	0 1
Any type of container over 340.95 mL(12 fl oz) but not over 909.19 mL (32 fl oz)	0-3000 3001-5000	3 6	0 1

A.4 Samples for analytical tests

Sampling for analytical tests shall be carried out in a random manner. The number of items to be selected shall be in accordance with table A. 2. This plan is derived from ISO 2859 using an AverageQuality Level (A.Q.L) of 6.5%. Special Inspection Level S3 was chosen on the basis that all items in

the lot would have received uniform treatment. The effectiveness of sampling plans is dependent onthe execution of proper quality control procedures.

Table 2 —Sampling for analytical testing of ketchup

Lot size	Sample size	Acceptance no.	Rejection no.
2-50	2	0	1
51-500	8	1	2
501-3200	13	2	3
3201-35000	20	3	4

A.5 Samples for microbiological tests

A.5.1 The sampling plan for inspection of microbiological quality is derived from ISO 2859. In this sampling plan, the sample size is 8, acceptance number is 0 and rejection number is 1, irrespective ofthe lot size. It based on an A.Q.L of 1.5 %. Where on first sampling and testing, a unit fails to meet the requirements; a second sample shall be taken. If on re-sampling and testing, another unit does not comply, the lot shall be deemed to have failed to meet the requirements of this specification.

A.5.2 Where more than one unit of the initial sample or one unit of the resample fails to meet the requirements, investigations to determine cause of failure and subsequent remedial action shall be necessary.

A.5.3 Special Inspection Level S3 was chosen on the basis that all items in the lot would have received uniform treatment. The effectiveness of the sampling plans is dependent on the execution of proper quality control procedures.

A.6 Criteria for acceptance

The lot, from which the sample is taken, shall be deemed to comply with the requirements of this standard if it satisfies the acceptance quality level set out in A.3, A.4 and A.5. The lot shall be rejectedif it does not satisfy the appropriate requirements of A.3, A.4 and A.5.

Annex B
(Normative)

Determination of total solids content

B.1 Apparatus

a) A refractometer (bench type or a portable instrument)

b) Any clean muslin or suitable material giving a reasonably clear filtrate.

B.2 Preparation of sample

Shake unopened container thoroughly to incorporate any sediment. Transfer entire contents to large glass or porcelain dish. Mix thoroughly, continuing stirring for at least 1 min. Transfer well-mixed sample to glass-stoppered container and shake or stir thoroughly each time before removing portions for analysis.

B.3 Method

B.3.1 Transfer about 50 g (2 oz) of sample prepared in B.2 to a suitable covered container and adjust to 20 ◦C (68◦F) or as near as possible taking care to avoid any evaporation or condensation which might affect the concentration of the product. Place about 15 g (0.5 oz) of the sample on a clean square of muslin, gather the ends and force the liquid through. Discard the first 4 drops. Allow 2 drops to fall on the measuring prism and take a reading, recording the temperature. If the temperature at which the reading is taken is not exactly 20 ◦C (68 ◦F) make the correction using table B.1. in the absence of instrumental temperature correction/ a temperature compensated refractometer.

B.3.2 Repeat the measurement on 2 other drops of the product. Report the total solids content in relationship to the sucrose per cent in table B.2 taken from the international Scale of Refractive Indices of sucrose solution at 20◦ C.

Table 1- International temperature correction table, 1936

Temp.		Percent Sucrose										
		0	5	10	15	20	25	30	40	50	60	70
°C	°F	Subtract from the percent sucrose										
10	50	0.50	0.54	0.58	0.61	0.64	0.66	0.68	0.72	0.74	0.76	0.79
11	51.8	0.46	0.49	0.53	0.55	0.58	0.60	0.62	0.65	0.67	0.69	0.71
12	53.6	0.42	0.45	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.61	0.63
13	55.4	0.37	0.40	0.42	0.44	0.46	0.48	0.49	0.51	0.53	0.54	0.55
14	57.2	0.33	0.35	0.37	0.39	0.40	0.41	0.42	0.44	0.45	0.46	0.48
15	59.0	0.27	0.29	0.31	0.33	0.34	0.34	0.35	0.37	0.38	0.39	0.40
16	60.8	0.22	0.24	0.25	0.26	0.27	0.28	0.28	0.30	0.30	0.30	0.32
17	62.6	0.17	0.18	0.19	0.20	0.21	0.21	0.21	0.22	0.23	0.23	0.24
18	64.4	0.12	0.13	0.13	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.16
19	66.2	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08
Add to the per cent sucrose												
21	69.8	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08
22	71.6	0.13	0.13	0.14	0.14	0.15	0.15	0.15	0.15	0.16	0.16	0.16
23	73.4	0.19	0.20	0.21	0.22	0.23	0.23	0.23	0.23	0.24	0.24	0.24
24	75.2	0.26	0.27	0.28	0.29	0.30	0.30	0.31	0.31	0.31	0.32	0.32
25	77.0	0.33	0.35	0.36	0.37	0.38	0.38	0.40	0.40	0.40	0.40	0.40
26	78.8	0.40	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.48	0.48	0.48
27	80.6	0.48	0.50	0.52	0.53	0.55	0.55	0.55	0.56	0.56	0.56	0.56
28	82.4	0.56	0.57	0.60	0.61	0.63	0.63	0.63	0.64	0.64	0.64	0.64
29	84.2	0.64	0.66	0.68	0.69	0.72	0.72	0.72	0.73	0.73	0.73	0.73
30	86.0	0.72	0.74	0.77	0.78	0.80	0.80	0.80	0.81	0.81	0.81	0.81

Table 2- Refractive indices of sucrose solution (International scale 1936)

Refractive Index At 20 °C	Sucrose per cent	Refractive Index At 20 °C	Sucrose per cent	Refractive Index At 20 °C	Sucrose per cent	Refractive Index At 20 °C	Sucrose per cent	Refractive Index At 20 °C	Sucrose per cent
1.36384	20.0	1.3723	25.0	1.3811	30.0	1.3902	35.0	1.3997	40.0
1.36417	20.2	1.3726	25.2	1.3815	30.2	1.3906	35.2	1.4001	40.2
1.36451	20.4	1.3730	25.4	1.3818	30.4	1.3909	35.4	1.4005	40.4
1.36484	20.6	1.3733	25.6	1.3822	30.6	1.3913	35.6	1.4008	40.6
1.36518	20.8	1.3737	25.8	1.3825	30.8	1.3916	35.8	1.4012	40.8
1.36551	21.0	1.3740	26.0	1.3829	31.0	1.3920	36.0	1.4016	41.0
1.36585	21.2	1.3744	26.2	1.3833	31.2	1.3924	36.2	1.4020	41.2
1.36618	21.4	1.3747	26.4	1.3836	31.4	1.3928	36.4	1.4024	41.4
1.36652	21.6	1.3751	26.6	1.3840	31.6	1.3931	36.6	1.4028	41.6
1.36685	21.8	1.3754	26.8	1.3843	31.8	1.3935	36.8	1.4032	41.8
1.36719	22.0	1.3758	27.0	1.3847	32.0	1.3939	37.0	1.4036	42.0
1.36753	22.2	1.3761	27.2	1.3851	32.2	1.3943	37.2	1.4040	42.2
1.36787	22.4	1.3765	27.4	1.3854	32.4	1.3947	37.4	1.4044	42.4
1.36820	22.6	1.3768	27.6	1.3858	32.6	1.3950	37.6	1.4048	42.6
1.36854	22.8	1.3772	27.8	1.3861	32.8	1.3954	37.8	1.4052	42.8
1.36888	23.0	1.3775	28.0	1.3865	33.0	1.3958	38.0	1.4036	43.0
1.36922	23.2	1.3779	28.2	1.3869	33.2	1.3962	38.2	1.4040	43.2
1.36956	23.4	1.3782	28.4	1.3872	33.4	1.3966	38.4	1.4044	43.4
1.36991	23.6	1.3786	28.6	1.3876	33.6	1.3970	38.6	1.4048	43.6
1.37025	23.8	1.3789	28.8	1.3879	33.8	1.3974	38.8	1.4052	43.8
1.37059	24.0	1.3793	29.0	1.3883	34.0	1.3978	39.0	1.4076	44.0
1.3709	24.2	1.3797	29.2	1.3887	34.2	1.3982	39.2	1.4080	44.2
1.3713	24.4	1.3800	29.4	1.3891	34.4	1.3986	39.4	1.4084	44.4
1.3716	24.6	1.3804	29.6	1.3894	34.6	1.3989	39.6	1.4088	44.6
1.3720	24.8	1.3807	29.8	1.3898	34.8	1.3993	39.8	1.4092	44.8

Annex C
(Normative)
Determination of sodium chloride content

C.1 Method 1

C.1.1 Reagents

a) 80 % alcohol

b) Nitric acid

c) 0.1 M (0.1N) silver nitrate (Ag NO3) solution

d) Saturated iron (III) ammonium sulphate [FeNH4(SO4)2] solution- ferric alum indicator

e) 0.1 M (0.1N) ammonium thiocyanate (NH4CNS)

C.1.2 Procedure

Prepare sample as in B.2 and accurately weigh 5 g (0.18 oz) of this sample. Transfer with 80% Alcohol to 100-mL volumetric flask, adding alcohol to a volume of 50 mL. Shake well and add 1 mL nitric acid. Using pipette add a known excess 0.1 M (0.1 N) silver nitrate solution. Dilute to 100 mL with alcohol, transfer to centrifuge tube and centrifuge for 5 min at 1800 r.p.m Pipette 50 mL of supernatant into a 300 mL Erlenmeyer flask and add 2 mL saturated iron II alum solution and 2 mL nitric acid. Titrate to a permanent light brown with ammonium thiocyanate.

C.1.3 Calculation

Divide volume of 0.1 M (0.1N) AgNO3 used in C.1.2 by 2 and subtract volume of NH4CNS solutionused. Multiply difference by 0.005844 to obtain NaCl present.

1 mL 0.1 M (0.1N) $AgNO_3$ = 0.005844 NaCl

% NaCl in ketchup = weight of NaCl present

$$\%NaCl = \left\{\frac{\text{Volume of 0.1 M (0.1N) } AgNO_3}{2}\right. - \text{Volume of NH4CNS X } 0.005844$$

C.2 Alternative Methods

An alternative method to Method 1 above is determination of sodium (Na) by flame atomic absorptionspectrophotometry after microwave acid digestion. Sodium (Na) is to be expressed as sodium chloride (NaCl) after determination. Suggested methods include, but are not limited to methods approved and published by the AOAC International or the CODEX Alimentarius Commission Determination of acidity as acetic acid

Reagents

a) 0.1 M (0.1N) sodium hydroxide solution

b) phenolphthalein indicator

C.2.1.2 Procedure

Prepare sample as in B.2 and weigh 5 g accurately. Dilute to 100 mL with neutralized H_2O and add 1 or 2 drops phenolphthalein. Titrate to end point with 0.1M (0.1N) NaOH solution.

C.2.1.3 Calculation

Report as % acetic acid

1 mL 0.1M (0.1N) NaOH = 0.0060 g acetic acid

$$\% \text{ acetic acid} = \frac{\text{Amt. NaOH used} \times 0.0060 \times 100}{\text{Amt. of sample}}$$

Annex D
(Normative)

Microbiological test method for ketchup

D.1 Estimation of mould count

D.1.1 Apparatus

a) Howard mould counting chamber and cover glass

b) Small Spatula, knife or scalpel blade

c) Compound microscope with one ocular fitted with a micrometer disc ruled in squares, each side of which is equal to one-sixth the diameter of the ocular diaphragm opening. The microscope should also have a standardized field of view of 1.382 mm diameter at 90 –125 x magnification which covers 1.5 mm^2.

D.1.2 Procedure

D.1.2.1 Mix contents of bottle by vigorous agitation. Using a small spatula, a knife or scalpel blade, transfer a small amount of the well mixed sample to the central disc of a clean Howard mould counting chamber and cover with a clean cover glass to get an even spread.

D.1.2.2 Place slide under a microscope and examine with such adjustment that each field of view covers 1.5mm^2. This area which is essential may frequently be obtained by so adjusting the draw tube that the diameter of the field becomes 1.382 mm.

D.1.2.3 Using a magnification of 90 –125 X, examine twenty-five fields for each of two mounts. The fields should be chosen in such a manner as to be representative of all sections of the mounts.

D.1.3 Interpretation of results

D.1.3.1 Record results as positive when aggregate length of ≥ 3 mould filaments present exceeds one-sixth the diameter of the field.

D.1.3.2 Calculate portion of positive fields from results of examination of all observed fields and report as percentage fields containing mould filaments.

D.1.4 Alternative methods

The estimation of mould count may also be conducted using the pour plate method using Potato Dextrose Agar of Malt Extract Agar (see E.2 below).

D.2 Yeast viability test

D.2.1

a) Sterile Petri dishes

b) Sterile 6-in cotton-tipped applicators

c) Potato dextrose agar (PDA) or malt extract agar (MEA)

d) Incubator controlled at 28 ± 2 C (82 ± 3.6F) (room temperature) or a clean mould- free cupboard

e) Compound microscope

f) Microscope slides

D.2.2 Preparation of culture media

Both potato dextrose agar or malt extract agar can be obtained commercially and preparation instructions on the container should be followed. Alternatively they can be prepared as follows:

D.2.2.1 Potato dextrose agar

a) Ingredients

Infusion from white potatoes	200 mL
Dextrose	20g
Agar	15g
Distilled water	1.0L

b) Procedure

Heat mixture to boiling to dissolve ingredients. Dispense in flasks or tubes and autoclave for 15 min at 121 C (250 F). Cool and acidify with sterile 10% tartaric acid to pH 3.5 with sterile Petri dishes and allow to solidify. To preserve solidifying properties of agar do not heat the medium after the addition of the tartaric acid.

D.2.2.2 Malt extract agar

Maltose, technical	12.75g
Dextrin	2.75 g
Glycerol	2.35 g
Peptone	0.78 g
Agar	15.0 g
Distilled Water	1.0L

ii) Procedure

Heat mixture to boiling to dissolve ingredients. Dispense in flasks or tubes and autoclave for 15 min at 121 ◦C (250 ◦F).Cool and check final pH which should be 4.6 $\pm$0.2. Adjust with sterile 10 % tartaric acid if necessary. Pour into sterile Petri dishes and allow to solidify.

D.2.3 Preparation of gram stain reagents

D.2.3.1 Hucker's crystal violet

Prepare the following:

1) Solution A

Crystal Violet	2.0g
Ethyl Alcohol	20.0mL

2) Solution B

Ammonium Oxalate	0.8g
Distilled Water	80.0 mL

Mix solution A and B and store for 24hrs before use

D.2.3.2 Iodine (Burke's)

Chemicals

Potassium iodide 2.0 g
Iodine 1.0 g
Distilled water 100.0 mL

Dissolve potassium iodide in water then add iodine.

D.2.3.3 Acetone alcohol

Mix the following reagents:
Ethyl alcohol (95) 70.0 mL
Acetone 30.0 mL

D.2.3.4 Safarin - Hucker's counterstain (stock solution)

Saffranin O (certified) 2.5 g

Ethyl alcohol (95%) 100 mL
For use add 10mL of stock solution to 90.0 mL distilled water.

D.2.4 Procedure

D.2.4.1 Preparation of sample

Shake bottle vigorously to mix contents. Use the sterile cotton tipped applicator to streak a small amount of the sample unto the dry surface of a Petri dish containing PDA or MEA. Incubate plates uninverted in room temperature incubator or clean dry cupboard for seven days. Examine plate foryeast colonies after incubation period. Confirm the presence of yeast by doing gram stain on representative colonies.

D.2.4.2 Gram staining

Stain yeast colonies as follows:

i) Make smear of colony on a microscope slide in a drop of distilled water. Allow to dry and fixsmear by passing through a Bunsen flame.

ii) Apply crystal violet solution for 1 min

iii) Wash with water and drain

iv) Apply iodine for 1 min

v) Flood slide with iodine and drain

vi) Wash slide with water and drain

vii) Decolourize using acetone – alcohol mixture until no more blue colour can be washed off.

viii) Wash with water and drain

ix) Counter stain with Safranin for 10 s

x) Wash with water and blot dry

xi) Examine under microscope using oil immersion

D.2.4.3 Interpretation of results

Results shall be interpreted as follows:

i) Yeast cells are stained blue

ii) If viable yeast cells are found the test is reported as being positive

iii) If no cells are found the test is reported as negative

D.3 Extraneous matters tests

D.3.1 Determination of light filth

D.3.1.1 Apparatus

i) Wildman trap flask consisting of a 2-L Erlenmeyer flask into which a close-fitting rubber stopper supported on a stiff metal rod has been inserted. The rod should have a diameter of about 5 mm threaded (No. 10-32) at the lower end and fitted with the nuts and washers to hold in the rubber stopper. The rod should extend about 10 cm above the height of the flask and the whole apparatus fitted with the suitable cover as illustrated in figure E.1.

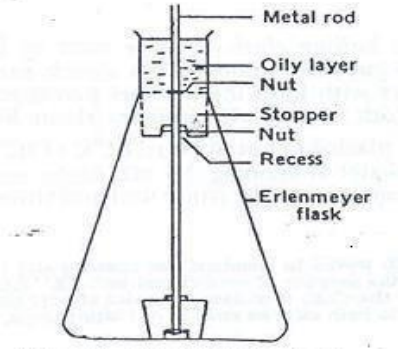

Figure 1 — Wildman trap flask

ii) Schleicher and Schuell (S and S) No. 8 filter paper ruled with lines 5 mm apart.

iii) Buchner funnel fitted to vacuum pump and suction flask.

iv) Wide field stereoscopic microscope for filth examination. Microscope should have the following minimum specification:

1) binocular body with inclined oculars

2) sliding or revolving nose-piece to accommodate three objectives

3) three parfocal objectives 1X, 3X and 6X or 7.5X
4) paired 10X and paired 15X wide field oculars mounted on base and capable of illumination by transmitted light

Petri dishes to hold paper for examination

D.3.1.2 Reagent

Castor Oil, heptane

D3.1.3 Procedure
Place 200 g of any tomato product except paste (where 100 g is used) in a 2-L flask. Add 20 mL castor oil and mix well. Add enough hot tap water, about 70 ºC (158 ºF) to fill the flask. Stir several times to remove air bubbles which will cause tomato tissues to rise. Let stand with occasional gentle stirring for 30 min, and then trap off in a beaker. Wash neck of flask with heptane to remove adhering castor oil. Add a little more hot water to flask stir and let stand 10 min and trap off again. Filter trapped off portion. Thoroughly wash beaker, sides of funnel and paper to dissolve castor oil and speed filtration. Examine paper at 30X using stereomicroscope

D.3.2 Determination of heavy filth

D.3.2.1 Apparatus

i) 2-L separator

ii) Heptane

iii) 10XX bolting cloth (see NOTE)

iv) Hirsch Funnel

v) Stereomicroscope

vi) Ring Stand

D.3.2.2 Procedure
Thoroughly mix sample and transfer 100 g to a 2-L separator. Add 20 mL to 25 mL heptane and shake

thoroughly, releasing pressure as necessary. Fill separator with water in such a manner as to produce maximum agitation. Place separator in ring stand and let settle. At 15-min intervals during 1 h, drain 15 mL to 20 mL from separator with rotary motion to facilitate settling out of fly eggs and maggots. Filter through 10XX bolting cloth, (pre-treated and dried) in Hirsch funnel. Examine for eggs and maggots under stereomicroscope at about draining for an additional hour.

D.3.2.2 Treatment and dyeing of bolting cloth

D.3.2.3.1 Prepare discs by boiling large squares of silk before cutting into circles. Circles cut from unboiled silk shrink and become misshapen. Make rulings about 5 mm to 7 mm apart with India ink or other permanent marking material using a fine pen on boiled and pressed cloth marked off in circles about 85 mm (3.3 in) in diameter.

D.3.2.3.2 When needed, dye ruled cloth by placing in hot 80 °C to 88 °C (176 °F to 185 °F) solution of 50 mg FD and C Blue No. 1 in L water containing 2.5 mL acetic acid and holding at this temperature for about 15 min with frequent stirring. Rinse well and store in the dark.

NOTE The bolting cloth is a silk cloth woven to standard size opening and thickness which is used in flour mills. The number of the silk specifies the number of mesh/linear inch. „X", „XX", or „XXX" after numbers refers to the thickness of thread from which the cloth is woven. This also affects the size of openings in the cloth. Therefore follow designation exactly as to both number and „X" or bolting cloth.

End of document

Standards Council

The Standards Council is the controlling body of the Bureau of Standards Jamaica and is responsible for the policy and general administration of the Bureau.

The Council is appointed by the Minister in the manner provided for in the Standards Act, 1969. Using its powers in the Standards Act, the Council appoints committees for specified purposes.

The Standards Act, 1969 sets out the duties of the Council and the steps to be followed for the formulation of a standard.

Preparation of standards documents

The following is an outline of the procedure which must be followed in the preparation of documents:

1. The preparation of standards documents is undertaken upon the Standard Council's authorisation. This may arise out of representation from national organisations or existing Bureau of Standards' Committees of Bureau staff. If the project is approved it is referred to the appropriate sectional committee or if none exists a new committee is formed, or the project is allotted to the Bureau's staff.

2. If necessary, when the final draft of a standard is ready, the Council authorises an approach to the Minister in order to obtain the formal concurrence of any other Minister who may be responsible for any area which the standard may affect.

3. The draft document is made available to the general public for comments. All interested parties, by means of a notice in the Press, are invited to comment. In addition, copies are forwarded to those known, interested in the subject.

4. The Committee considers all the comments received and recommends a final document to the Standards Council

5. The Standards Council recommends the document to the Minister for publication.

6. The Minister approves the recommendation of the Standards Council.

7. The declaration of the standard is gazetted and copies placed on sale.

8. On the recommendation of the Standards Council the Minister may declare a standard compulsory.

9. Amendments to and revisions of standards normally require the same procedure as is applied to the preparation of the original standard.

Overseas standards documents

The Bureau of Standards Jamaica maintains a reference library which includes the standards of many overseas standards organisations. These standards can be inspected upon request.

The Bureau can supply on demand copies of standards produced by some national standards bodies and is the agency for the sale of standards produced by the International Organization for Standardization (ISO) members.

Application to use the reference library and to purchase Jamaican and other standards documents should be addressed to:

Bureau of Standards Jamaica
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P.O. Box 113,
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