

BHUTAN STANDARD

QUICK FROZEN EVISCERATED OR UNEVISCERATED RAINBOW TROUT



ICS 03.080.30

© Copyright 2024

BHUTAN STANDARDS BUREAU

The National Standards Body of Bhutan

Thimphu 11001

June 2024

Price group A

BHUTAN STANDARD

QUICK FROZEN EVISCERATED OR UNEVISCERATED RAINBOW TROUT

PDF disclaimer

This PDF may contain embedded typefaces. In accordance with Adobe's Licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The Bhutan Standards Bureau accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

COPYRIGHT PROTECTED DOCUMENT

© BSB 2024

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from BSB at the address below in the country of the requester.

Director General
Bhutan Standards Bureau
Rijug Lam
Thimphu-11001
Tel: 00975-2-325104/325401
Fax: 00975-2-323712/328298
Web: www.bsb.gov.bt

Published in Thimphu, Bhutan

Table of Contents

| | |
|---|-----------------|
| <i>NATIONAL FOREWORD</i> | <i>v</i> |
| <i>1 Scope.....</i> | <i>1</i> |
| <i>2 Normative References.....</i> | <i>1</i> |
| <i>3 Terms and Definition</i> | <i>1</i> |
| 3.1 Glazing..... | 1 |
| 3.2 Freezing | 1 |
| 3.3 Quick freezing..... | 1 |
| 3.4 Thawing | 1 |
| 3.5 Eviscerated | 1 |
| 3.6 Product..... | 1 |
| 3.7 Foreign matter..... | 1 |
| 3.8 Belly Burst..... | 2 |
| 3.9 Textural breakdown..... | 2 |
| 3.10 Abnormal Odour and Flavour..... | 2 |
| <i>4 Requirement</i> | <i>2</i> |
| 4.1 Fish | 2 |
| 4.2 Glazing..... | 2 |
| 4.3 Additives..... | 2 |
| 4.4 Decomposition..... | 2 |
| 4.5 Contaminants..... | 2 |
| 4.5.1 Heavy Metals | 2 |
| 4.6 Hygiene | 3 |
| 4.7 Packaging and Labelling..... | 3 |
| <i>5 Defects.....</i> | <i>4</i> |
| <i>6 Sampling, Examination and Analysis.....</i> | <i>4</i> |
| <i>7 Lot acceptance.....</i> | <i>4</i> |
| <i>Annex A.....</i> | <i>6</i> |
| 1 Process Description | 6 |

Bibliography.....8

NATIONAL FOREWORD

Bhutan Standards Bureau (BSB) is a National Standards Body (NSB) of Bhutan. This standard for quick frozen eviscerated or eviscerated rainbow trout was developed by Subcommittee on Fish and Fish Products (SC16) under Bhutan Standards Bureau after the draft finalization by the Food and Agriculture Technical Committee, TC 02 and approved by the Bhutan Standards Bureau Board (BSB Board) on date Month year.

This standard specifies requirements for quick frozen eviscerated or eviscerated rainbow trout. This standard is drafted in accordance with the BSB Rule for Structure and Drafting of Bhutan Standards, 2018. Some of the elements of this standard may be the subject of copyrights.

This standard is subject to systematic review after five years to keep pace with the market trends, industrial and technological developments. Amendments are issued to standards as the need arises on the basis of comments.

BHUTAN STANDARD

QUICK FROZEN EVISCERATED OR UNEVISCERATED RAINBOW TROUT

1 Scope

This standard shall apply to commercial quick frozen eviscerated or un-eviscerated rainbow trout (*Oncorhynchus mykiss*) with or without head for human consumption.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BTS 139: 2019 SARS 00014: 2018 *Bhutan Standard for Food Hygiene-General Principles-Code of Practice*.

BTS 268:2020 CODEX STAN 1-1985, *General Standards for the Labelling of Prepackaged Foods*

BTS 271 CXS 192 *General standard for food additives*.

3 Terms and Definition

For the purpose of this document, the following terms and definitions shall apply:

3.1 Glazing

Glazing is a process of applying a protective coating of ice (ice glaze) to frozen products by dipping or spraying the frozen product with potable water.

3.2 Freezing

Freezing is a process of preservation in which the temperature of products is lowered at -18°C or below with most of the water inside a fish tissue turning into ice.

3.3 Quick freezing

Quick freezing refers to the freezing process in which the fish passes through the temperature range of maximum crystallisation from -1 to -5°C in 30 minutes or less.

3.4 Thawing

Thawing refers to the process of taking a frozen fish from frozen state to a temperature (usually above 0°C) where there is no residual ice.

3.5 Eviscerated

The removal of the gut and all other internal organs.

3.6 Product

Frozen rainbow trout suitable for human consumption, with or without the head, from which the viscera or other organs may have been completely or partially removed.

3.7 Foreign matter

All organic or inorganic matter other than the fish which are unintentionally added and does not pose a threat to human health, and is readily recognized without magnification or is present at a level determined by any method including magnification.

3.8 Belly Burst

The presence of ruptured bellies in un-eviscerated fish indicative of decomposition, improper handling.

3.9 Textural breakdown

Textural breakdown of the flesh, indicative of decomposition characterised by muscle structure which is mushy or paste-like, or by separation of flesh from the bones.

3.10 Abnormal Odour and Flavour

Non-characteristics smell and taste that is not associated with healthy rainbow trout indicative of decomposition or rancidity.

4 Requirement

4.1 Fish

Quick frozen rainbow trout shall be prepared from healthy fish which are of a quality fit to be sold fresh for human consumption.

4.2 Glazing

If glazed, the water used for glazing or preparing glazing solutions shall be of potable quality. Standards of potability shall not be less than those contained in the latest edition of the WHO *"International Guidelines for Drinking Water Quality"*.

4.3 Additives

Permissible food additives and preservatives may be added within the permissible level in accordance with BTS 271 CXS 192 *General standard for food additives*.

4.4 Decomposition

The products shall not exceed the microbiological limits as stated below in Table _1:

Table 1-Microbiological requirements for product

| Sl. No. | Particulars | Limits | Test method |
|---------|-----------------------|------------------------------|------------------|
| a | Total count | 5x10 ⁵ colonies/g | IS 5402 |
| b | E. coli | 10 MPN/g of sample | IS 5887(Part 5) |
| c | Staphylococcus aureus | 1x10 ² colonies/g | IS 5887(Part 2) |
| d | Salmonella spp. | absent in 25g | IS 5887 |
| e | Shigella spp. | absent in 25g | IS:5402/ISO 4833 |

The test methods are only recommendation and laboratories may use any validated method of analysis.

4.5 Contaminants

4.5.1 Heavy Metals

The products shall not exceed the heavy metal contamination limits as stated below in Table _2.

Table 2- Heavy Metal Requirements for Product

| Heavy metal | Maximum level (ML) mg/kg | Portion of the commodity/Product to which the ML applies |
|---------------------|-----------------------------|---|
| Lead | 0.3 | Fresh weight |
| Methyl Mercury | 0.5 | |
| Cadmium | 0.3 | |
| Arsenic (inorganic) | 0.1 | |

4.6 Hygiene

4.6.1 The Product shall be handled in accordance with the provision of BTS 139: 2020 SARS 0014:2020.

4.6.2 The product covered by this standard should be prepared and handled in accordance the Codex *Code of Practice for Fish and Fishery Products* (CAC/RCP 52-2003), the Codex *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CAC/RCP 8-1976), and other relevant Codex Codes of Hygienic Practice and Codes of Practice.

4.7 Packaging and Labelling

4.7.1 Packaging

4.7.1.1 The product shall be packed in food grade packaging materials such as ordinary polyethylene (PE) or vacuum pack bags made of suitable film or laminates, which are clean and free from any foreign matters or contaminants.

4.7.1.2 The frozen products shall be packed either by count per unit of weight or per package.

4.7.2 Labelling

In addition to the provisions of the BTS 268:2020 CODEX STAN 1-1985, *General Standards for the Labelling of Prepackaged Foods*.

4.7.2.1 The name of the product

1. In addition to the common or usual name of the species, the label, in the case of eviscerated fish, shall include terms indicating that the fish has been eviscerated and whether presented as "head-on" or "headless".
2. The term "quick frozen", shall also appear on the label, except that the term "frozen" may be applied in countries where this term is customarily used for describing the product processed in accordance with annex A of this standard.
3. The label shall state that the product should be maintained under conditions that will maintain the quality during transportation, storage and distribution.

4.7.2.2 Net contents (Glazed products)

Where the food has been glazed, the declaration of net contents of the product shall be exclusive of the glaze.

4.7.2.3 Storage instruction

DBTS XXX: 2024

The label shall include terms to indicate that the product shall be stored at a temperature of -18°C or below.

5 Defects

5.1 Deep dehydration

The product shall not have greater than 10% of the surface area of the block or greater than 10% of the weight of fish in the sample unit exhibits excessive loss of moisture clearly shown as white or yellow abnormality on the surface which masks the colour of the flesh and penetrates below the surface, and cannot be easily removed by scraping with a knife or other sharp instrument without unduly affecting the appearance of the fish.

5.2 Foreign matter

The product shall be free from any foreign matter.

5.3 Abnormal Odour and flavour

The Product shall be free from abnormal odour and flavour.

5.4 Texture Breakdown

The product shall not have textural breakdown of the flesh.

5.5 Flesh abnormalities

The product shall not be affected by excessive gelatinous condition of the flesh together with greater than 86% moisture found in any individual fish or sample unit with pasty texture resulting from parasitic infestation affecting more than 5% of the sample unit by weight.

5.6 Belly Burst

The product shall be free from belly burst.

6 Sampling, Examination and Analysis

6.1 Sampling

Sampling shall be carried out according to internationally accepted methods or national methods recognized internationally.

6.2 Sensory and physical examination

Samples taken for sensory and physical examination shall be assessed as per the requirement in Annex B.

7 Lot acceptance

A lot shall be considered as meeting the requirements of this standard when:

- (i) The total number of defectives as classified according to clause 6(change in clause) does not exceed the acceptance number(c) of the sampling plan for pre-packaged foods (AQL-6.5) (CAC/RM 42-1977).

- (ii) The average net weight of all sample units is not less than the declared weight, provided there is no unreasonable shortage in any container; and
- (iii) The Hygiene and Labelling requirements of clause 5.6 and 5.7 are met.

Annex A
(Informative reference)

1 Process Description

The product, after any suitable preparation, shall be subjected to a freezing process and shall comply with the conditions laid down hereafter. The freezing process shall be carried out in appropriate equipment in such a way that the range of temperature of maximum crystallisation is passed quickly. The quick-freezing process shall not be regarded as complete unless and until the product temperature has reached -18°C or below at the thermal centre after thermal stabilisation. Glazing may be applied for products intended for prolonged storage to minimise dehydration and oxidation. The product shall be kept deep frozen so as to maintain the quality during transportation, storage and distribution.

Annex B
(Normative Reference)

1 Determination of net weight

a. Determination of net weight of products not covered by glaze

The net weight (exclusive of packaging material) of each sample unit representing a lot shall be determined in the frozen state.

b. Determination of net weight of products covered by glaze

The package should be removed from low temperature storage. It should be opened immediately and contents should be placed under a gentle spray of cold water. Agitation should be carefully done so that the product is not broken and should be sprayed until all ice-glaze that can be seen or felt is removed. Adhering water should be removed by the use of a paper towel and the product weighed in a pan.

2 Thawing

a. Air Thaw Method

Frozen fish should be removed from the packaging. The frozen fish should be individually placed into snug-fitting impermeable plastic bags or a humidity-controlled environment with a relative humidity of at least 80%. Prior to sealing, air should be removed from the bags as much as possible. The frozen fish sealed in plastic bags should be placed on individual trays and thawed at air temperature of 25°C or lower. Thawing should be completed when the product can be readily separated without tearing. Internal fish temperature should not exceed 7°C.

b. Water immersion method

Frozen fish should be removed from the packaging and sealed in plastic bags. Prior to sealing, air should be removed from the bags as much as possible. The frozen fish should be placed into a circulating water bath with temperatures maintained between 21°C to 22.5 °C . Thawing should be completed when the product can be easily separated without tearing. Internal fish temperature should not exceed 7°C.

c. Determination of gelatinous conditions

The method of determining gelatinous conditions should be in accordance with AOAC Methods – “Moisture in Meat and Meat Products, preparation of sample procedure “983.18 and “Moisture in Meat” (Method A); 950.46 or other equivalent method.

d. Cooking methods

The following procedures should be based on heating the product to an internal temperature of 65°C to 70°C. The product should not be overcooked. Cooking times should vary according to the size of the product and the temperatures used. The exact times and conditions of cooking for the product should be determined by prior experimentation.

a. Baking procedure

The product should be wrapped in aluminium foil and placed evenly on a flat cookie sheet or shallow flat pan.

b. Steaming procedure

The product should be wrapped in aluminium foil and placed on a wire rack suspended over boiling water in a covered container.

c. Boil-in-Bag Procedure

The product should be placed in a food grade boilable film-type pouch and sealed. The pouch should be immersed in boiling water until cooked.

d. Microwave Procedure

The product should be enclosed in a container suitable for microwave cooking. If plastic bags are used, no odour should be imparted to the product from the plastic bags. Cooking procedure should be in accordance with the equipment specifications.

e. Deep dehydration

Examine the frozen sample unit for the presence of deep dehydration by measuring those areas or counting instances which can only be removed with a knife or other sharp instrument. Measure the total surface area of the sample unit, and calculate the percentage affected.

f. Flesh Odours

Flesh odours are examined by tearing or making a cut across the back of the neck such that the exposed surface of the flesh can be evaluated.

g. Odour or Texture

In cases where a final decision regarding the odour or texture can not be made in the thawed uncooked state, a small portion of the flesh (approximately 200 g) is sectioned from the product and the odour, flavour or texture confirmed without delay by using one of the cooking methods defined in Annex A Section 4.

Bibliography

- [1] RSPCA welfare standards for Farmed rainbow trout
- [2] ASC Freshwater Trout Standard
- [3] Codex code of practice for fish and fish products
- [4] Codex code of practice for the processing and handling of quick frozen foods
- [5] Codex guideline for the sensory evaluation of fish and shell fish in laboratories

FOOD AND AGRICULTURE TECHNICAL COMMITTEE (TC 02)**Organization****Representative(s)**

National Dairy Development Centre, MoAL, Thimphu

Mr. Phuntsho T Norbu (Chairperson)

Bhutan Agro Industries Limited, Thimphu

Ms. Tashi Dema

Bhutan Exporters Association, Phuentsholing

Mr. Tshering Yeshe

Bhutan Food and Drug Authority, MoH, Thimphu

Ms. Yeshe Lhamo

Bhutan Livestock Development Corporation Limited,
Thimphu

Mr. Birendra Dhakal

Department of Agriculture, MoAL, Thimphu

Mr. Namgay Thinley

Department of Agriculture, MoAL, Thimphu

Mr. Bal Bahadur Rai (Alternate)

Department of Agricultural Marketing and Cooperatives,
MoAL, Thimphu

Mr. Dawa Tshering

Department of Agricultural Marketing and Cooperatives,
MoAL, Thimphu

Mr. Jamyang Lophyal (Alternate)

Department of Industry, MoICE, Thimphu

Mr. Tashi Dorji

National Post Harvest Centre, DAMC, MoAL, Paro

Ms. Sonam Lhamo

Competition and Consumers Affairs Authority, MoICE,
Thimphu

Mr. Jigme Dorji

Competition and Consumers Affairs Authority, MoICE,
Thimphu

Ms. Tshewang Choden (Alternate)

Bhutan Standards Bureau, Thimphu

Mr. Karma Wangdi,
Offtg. Director General
(Ex-officio member)**Member Secretary**

Cheki Zangmo

Standardization Division

Bhutan Standards Bureau

SUBCOMMITTEE ON FISH & FISH PRODUCT

ORGANISATION REPRESENTATIVES

Chairperson

Bhutan Food and Drug Authority, MoH

Dr. Chador Wangdi

Member

National Research and Development Centre for Riverine
and Lake Fisheries, Haa DoL, MoAL.

Mr. Changlu

Commercial Rainbow Trout Farm, Haa, BLDCL

Mr. Sangay Norbu

Member Secretary

Kesang Phuntsho Namgay
Standardization Division
Bhutan Standards Bureau