PHILIPPINE NATIONAL STANDARD

PNS/BAFS 185:2022
ICS 67.180.10

Honey — Product Standard — Specifications

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Foreword

In 2020, the Philippine Nuclear Research Institute-Department of Science and Technology (DOST-PNRI) submitted a proposal to amend the PNS on Honey (PNS/BAFS 185:2016) due to cases of adulteration of locally-produced honey as confirmed by their laboratory tests on carbon stable isotope ratio. In the same year, the Bureau of Agriculture and Fisheries Standards-Department of Agriculture (BAFS-DA) subjected the proposal to a standards development prioritization process which resulted to the commencement of work on the amendment of PNS on Honey in 2022.

A Technical Working Group (TWG) was established through Special Order No. 103, series of 2022 (Creation of TWG for the development of PNS for agriculture and fishery products, machineries, and infrastructures). The TWG was composed of representatives from relevant government agencies, academe, the private sector, and Civil Society Organization (CSO). The draft PNS underwent a series of TWG meetings and stakeholder consultations conducted physically and via online platforms from March to September 2022 before its endorsement to the DA Secretary for approval.

This standard includes the following significant changes compared to the PNS/BAFS 185:2016:

a) Amendment of scope;
b) Inclusion of normative references;
c) Amendment of terms and definitions;
d) Amendment of the description;
e) Inclusion of carbon stable isotope ratio of honey;
f) Inclusion of minimum requirements;
g) Inclusion of maximum residue limit for lead;
h) Amendment of hygiene;
i) Amendment of labeling;
j) Amendment of methods of sampling; and
k) Inclusion of the moisture content of honey per species of honey-producing bees.

It is drafted in accordance with the Standardization Guide No. 1: Writing the Philippine National Standards of the Standards Development Division of the BAFS-DA.

Table of Contents

1 Scope

This Standard applies to all kinds of honey produced by bees that are intended for human and animal consumption.

2 Normative References

The following documents are referred to in the text in such a way that some or all their contents constitute the requirements of this document. The latest edition of the referenced documents (including any amendments) applies.

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3 Terms and Definitions

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

3.1
blossom honey
honey which comes from nectars of plants, also referred to as nectar honey

3.2
comb honey
honey stored by bees in the cells of freshly built broodless combs

3.3
crystalline honey
creamed honey
honey that has solidified or crystallized as a result of having nectar source with higher glucose amount than fructose

3.4
cut-comb honey
chunk honey
honey containing one or more pieces of comb honey

3.5
drained honey
honey obtained by draining decapped broodless combs/honeycombs/honey pots

3.6
extracted honey
honey obtained by centrifugal extraction of decapped honeycombs/uncapped combs/honey pots

3.7
filtered honey
honey which has been filtered to result in the significant removal of pollen

3.8
honey
natural sweet substance produced by bees from the nectar or secretions from plants or excretions of plant sucking insects on the living parts of plants, which the bees collect and transform by combining with specific substances of their own, deposit, dehydrate, store, and leave in the honeycomb to ripen and mature

3.9
honeydew honey
honey which comes mainly from excretions of plant sucking insects (Hemiptera) on the living parts of plants or secretions of living parts of plants

3.10
moisture content
amount of water present in the honey

3.11
pressed honey
honey obtained by pressing broodless combs/honey pots

3.12
wild honey
honey which comes from non-domesticated bee colonies

4 Description

4.1 Components

Honey consists essentially of different sugars, predominantly fructose and glucose, as well as other substances such as water, organic acids, enzymes, and solid particles derived from its collection. The limits for the additional components of honey are listed in Annex A (Additional components and their properties).

4.2 Physical properties

The color of honey varies from nearly colorless to dark brown depending on pollen and nectar sources. The consistency can be fluid, viscous or partly to entirely crystallized. The flavor varies from sweet, semi-sweet, sour or slightly bitter. The aroma varies from floral, fruity, smoky, woody, spicy, nutty or earthy, depending on the food source of the bees.

4.3 Chemical properties

4.3.1 The honey shall have the moisture content shown in Table 1. The moisture content for honey per species of honey-producing bees are listed in Annex B (Moisture content of honey per species of honey-producing bees).

Table 1. Moisture content of honey

Honey source	% Moisture limit
Wild honey	not more than 23%
Honeys other than wild	not more than 20%

4.3.2 The honey shall have the following fructose and glucose (sum of both) content according to source as shown in Table 2:

Table 2. Fructose and glucose content (sum of both) of honey

Honey source	Fructose and glucose limit
Honeydew honey, blends of honeydew honey with blossom honey	not less than 45g/100g
Honeys other than those listed above	not less than 60g/100g

4.3.3 The honey shall have a sucrose content according to source, as shown in Table 3:

Table 3. Sucrose content of honey

Honey source	Sucrose limit
Honeys derived from *Citrus* spp., *Cassia* spp., Dapdap (*Erythrina* spp.), Banana (*Musa* spp.), Pineapple (*Ananas comosus*)	not more than 15g/100g

Honeys other than those listed above	not more than 5g/100g

4.3.4 The honey shall have the following water insoluble solids content as shown in Table 4:

Table 4. Water insoluble solids content of honey

Honey source	Insoluble solids content limit
Pressed honey	not more than 0.5g/100g
Honeys other than pressed honey	not more than 0.1g/100g

4.3.5 The honey should have the following carbon stable isotope ratio as shown in Table 5 which may be used on an optional basis:

Table 5. Carbon stable isotope ratio of honey

Parameter	Carbon stable isotope ratio limit
Protein $\delta^{13}C$ – bulk $\delta^{13}C$	not less than -1‰
Bulk $\delta^{13}C$	not more than -19.2‰, VPDB

5 Minimum Requirements

5.1 Honey shall not have any food ingredient added to it, including food additives. Honey shall not have any objectionable matter, flavor, aroma, or taint absorbed from foreign matter during its processing and storage. The honey shall not have begun to ferment or effervesce.

5.2 Honey shall not be heated or processed to such an extent that its components are changed and/ or its quality is impaired.

5.3 Chemical or biochemical treatments shall not be used to influence honey crystallization.

5.4 No pollen or constituent particular to honey may be removed except when this is unavoidable in the removal of foreign inorganic or organic matter. Honey shall not be filtered in such a way as to result in the significant removal of pollen. Ultra-high filtration shall not be allowed.

6 Contaminants

6.1 Heavy metals

Honey shall be free from heavy metals in amounts which may represent a hazard to human health. The products covered by this Standard shall conform

with those Maximum Levels (ML) for heavy metals established by the CAC specifically for honey as shown in Table 6.

Table 6. ML for heavy metal in honey (Codex Committee on Contaminants in Food [CCCF], 2022)

Heavy Metal	ML (mg/kg)
Lead	0.1

6.2 Residues of pesticides and veterinary drugs

The products covered by this standard shall conform with those Maximum Residue Limits (MRL) for honey established by the CAC.

7 Hygiene

7.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of CAC/RCP 1-1969, rev. 2020 (Recommended International Code of Practice - General Principles of Food Hygiene) and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice, PNS/BAFS 186:2016 (Code of good beekeeping practices), FAO Animal Production and Health Guideline No. 25 (Good beekeeping practices for sustainable apiculture), and FDA-DOH Administrative Order No. 153, series of 2004 (Guidelines on the current good manufacturing practices in manufacturing, packing, repacking or holding food and its future amendments).

7.2 The products shall conform with any microbiological criteria established in accordance with the PNS/BAFS 186:2016 (Code of good beekeeping practices).

8 Labeling

All honey to be sold or retailed in the market shall be in accordance with Codex Stan 1-1985, rev. 2018 (General standard for the labelling of pre- packaged foods) and/or the FDA-DOH Administrative Order No. 2014-0030 (Revised rules and regulations governing the labeling of prepackaged food products further amending certain provisions of FDA Administrative Order No. 88-B series of 1984 – Rules and regulations governing the labeling of prepackaged food products distributed in the Philippines) and their future amendments, as may be applicable. An example of the label's layout is shown in Annex C. In addition, the following provisions should be followed:

8.1 Name of food

8.1.1 Only products conforming to this Standard shall use the term 'honey' in their label.

8.1.2 For products described in Table 2, the name of the food may be supplemented by the term “blossom” or “nectar”.

8.1.3 For products described in Table 2, the word “honeydew” may be placed in close proximity to the name of the food.

8.1.4 For mixtures of the products described in Table 2, the name of the food may be supplemented with the words “a blend of honeydew honey with blossom honey”.

8.1.5 Location of hive

The label of the honey should include the geographical or topographical region where the honey was produced (e.g., Mt. Pulag, Benguet).

8.1.6 Species

The label of the honey should include the common (e.g., *lukot*, *laywan*) or scientific name (e.g., *Tetragonula* spp., *Apis* spp.) of the bee species that produced the honey.

8.1.7 Plant source of honey

Honey may be designated according to floral or plant source if it comes wholly or mainly from that particular source and has the organoleptic, physico-chemical and microscopic properties corresponding to that origin (e.g., common name such as sunflower, coconut or botanical name such as *Helianthus annuus, Cocos nucifera*).

8.1.8 Where honey has been designated according to floral or plant source as indicated in 8.1.7 then the common name or the botanical name of the floral source shall be in close proximity to the word "honey".

8.1.9 Method of honey extraction

Honey may be designated according to the method of removal from the comb:
a) Extracted honey;
b) Pressed honey; or
c) Drained honey.

8.1.10 Kind of presentation

Honey may be designated according to the following:
a) Liquid honey;
b) Crystalline honey/creamed honey;
c) Comb honey; or
d) Cut comb honey or chunk honey

8.1.11 The subsidiary designations listed in 8.1.10 may be used only for the honey conforming to the appropriate description contained in Clause 3. The kinds in 8.1.1 (b) and (c) shall be declared.

8.2 Date of harvest

The date of harvest shall be clearly marked in the label. The day, month, and year shall be declared in uncoded numerical sequence except that the month should be indicated by letters or have a legend as reference (e.g., mm/dd/yy) so as not to confuse the consumer (e.g., 01JAN2022).

8.3 Labeling of non-retail containers

Information on labelling as specified in Codex Stan 1-1985, rev. 2018 (General standard for the labelling of prepackaged foods) particularly in 6.1 wherein the information shall be given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name and address of the producer, processor or packer shall appear on the container.

9 Methods of Sampling and Analysis

The methods of sampling and analysis to be employed for the determination of the compositional and quality factors include but is not limited to those detailed below:

9.1 Sample preparation

Samples should be prepared in accordance with AOAC International 920.180-1920 (Honey [liquid, strained, or comb]).

9.2 Determination of moisture content

Moisture content of honey shall be analyzed based on AOAC 969.38-1969 (Moisture in honey) and other accepted and validated methods.

9.3 Determination of sugar content

9.3.1 Fructose and glucose content (sum of both)

Determination of fructose and glucose content in honey shall be based on Harmonized Methods of the International Honey Commission Chapter 7 – Sugar (Determination of sugars by High Performance Liquid Chromatography [HPLC]) and other accepted and validated methods.

9.3.2 Sucrose content

Determination of sucrose content in honey shall be based on Harmonized Methods of the International Honey Commission Chapter 7 – Sugar (Determination of sugars by HPLC) and other accepted and validated methods.

9.4 Determination of water-insoluble solids content

Water-insoluble solids content of honey shall be analyzed based on Japan's Ministry of Agriculture, Forestry, and Fisheries (MAFF) validated methods for the analysis of foodstuffs. No. V22 (Water-insoluble solids in honey) and other accepted and validated methods.

9.5 Determination of sugar added to honey (authenticity)

Determination of sugar added to honey shall be analyzed based on AOAC 991.41-1996 (C-4 plant sugars in honey) and AOAC 998.12-1998 (C-4 plant sugars in honey) and other accepted and validated methods.

ANNEX A
(Informative)

Additional components and their properties

Honey may have the following components and properties:

1 Free Acidity

The free acidity of honey shall not be more than 50 mEq acid per 1000g.

2 Diastase Activity

The diastase activity of honey, determined after processing and/or blending, in general not less than 8 Schade units and in the case of honey with a low natural enzyme content not less than 3 Schade Units.

3 Hydroxymethylfurfural (HMF) Content

The hydroxymethylfurfural content of honey after processing and/or blending shall not be more than 40 mg/kg. However, in the case of honey of declared origin from countries or regions with tropical ambient temperatures, and blends of these honeys, the HMF content shall not be more than 80 mg/kg.

4 Electrical Conductivity

(a) honey not listed under (b) or (c), and blends of these honeys	-	not more than 0.8 mS/cm
(b) Honeydew and chestnut honey and blends of these except with those listed under (c)	-	not less than 0.8 mS/cm

(c) Exceptions: Honey derived from *Eucalyptus* spp., Linden (*Tilia* spp.), Tea tree (*Melaleuca* spp.).

5 Methods of Sampling and Analysis

The methods of sampling and analysis to be employed for the determination of the additional compositional and quality factors are detailed below:

5.1 Sample preparation

The method of sample preparation is described in section 9.1 of the Standard. In the determination of diastase activity and HMF content, samples are

prepared without heating.

5.2 Methods of analysis

5.2.1 Determination of free acidity

Determination of free acidity in honey shall be based on AOAC 962.19-1977 (Acidity [free, lactone, and total] of honey) and other accepted and validated methods.

5.2.2 Determination of diastase activity

Determination of diastase activity of honey shall be based on AOAC 958.09-1997(2010) (Diastatic activity of honey) and other accepted and validated methods.

5.2.3 Determination of HMF content

Determination of HMF content in honey shall be based on AOAC 980.23-1983 (Determination of HMF content in honey) and other accepted and validated methods.

5.2.4 Determination of electrical conductivity

Determination of electrical conductivity should be based on conductimetric assay (WTW Inolab conductivimeter) and other accepted and validated methods.

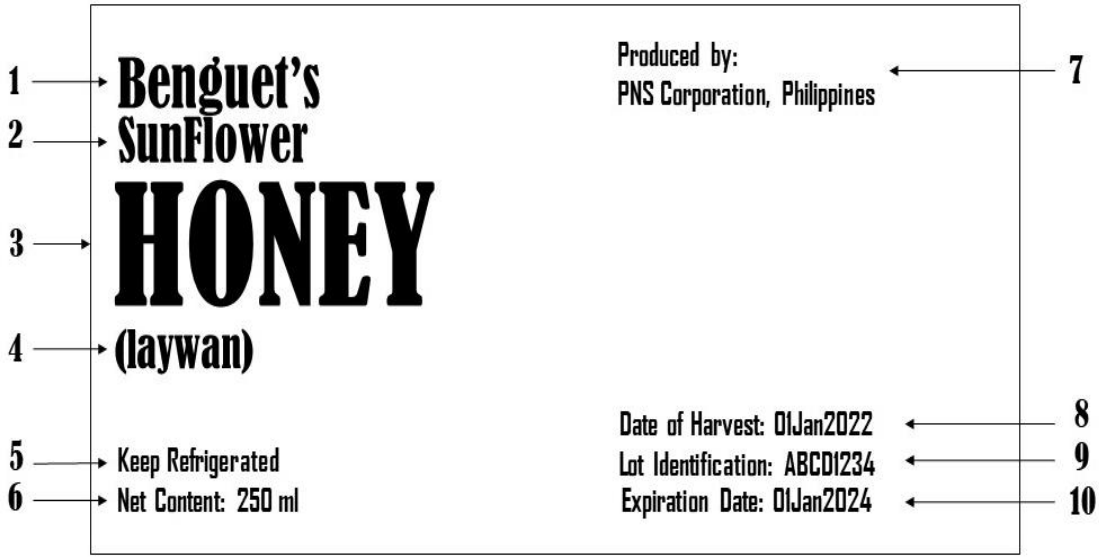
ANNEX B
(Informative)

Moisture content of honey per species of honey-producing bee

Honey source	Species	Moisture content limit
Wild honey	*Apis breviligula*	not more than 23%
	Apis dorsata	not more than 23%
Honeys other than wild honey	*Apis mellifera*	not more than 20%
	Apis cerana	not more than 20%

Annex C
(Informative)

Example layout of label



Legend:

1 – Location of hive
2 – Plant source
3 – Name of the product
4 – Species
5 – Storage condition
6 – Net content
7 – Name and address of the producer
8 – Date of Harvest
9 – Lot identification code
10 – Expiration date

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