INTERNATIONAL STANDARD

ISO 24081

First edition
2021-01

Ground cassava leaves (Isombe) — Specification

Feuilles de manioc émincées (Isombe) — Spécification

Reference number
ISO 24081:2021(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 3, *Fruits and vegetables and their derived products*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Cassava, originally from Brazil, is a staple root crop throughout the tropics where it is used in a variety of dishes. Cassava is grown overwhelmingly for its roots and is found in markets.

In some countries there is a market for cassava leaves, where it is used in soups and stews. Cassava contains cyanide, which varies greatly among cultivars and needs to be detoxified before human consumption. Cassava roots are cooked and this sufficiently detoxifies them. Cassava leaves also contain cyanide, and research has shown that traditional methods for preparing cassava leaves for consumption, including grinding, cooking and heat-treating them before consumption, sufficiently detoxifies the cyanide.

Ground cassava leaves (Isombe) — Specification

1 Scope

This document specifies requirements and methods of sampling and testing for ground cassava leaves, which are obtained from the processing of fresh cassava leaves *(Manihot esculenta* Crantz or *Manihot glaziovii*) intended for human consumption.

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. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 763, *Fruit and vegetable products — Determination of ash insoluble in hydrochloric acid*

ISO 874, *Fresh fruits and vegetables — Sampling*

ISO 1026, *Fruit and vegetable products — Determination of dry matter content by drying under reduced pressure and of water content by azeotropic distillation*

ISO 2171, *Cereals, pulses and by-products — Determination of ash yield by incineration*

ISO 4833-1, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 1: Colony count at 30 °C by the pour plate technique*

ISO 4833-2, *Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 2: Colony count at 30 °C by the surface plating technique*

ISO 5498, *Agricultural food products — Determination of crude fibre content — General method*

ISO 6579-1, *Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella — Part 1: Detection of Salmonella spp.*

ISO 6633, *Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric method*

ISO 6634, *Fruits, vegetables and derived products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric method*

ISO 6637, *Fruits, vegetables and derived products — Determination of mercury content — Flameless atomic absorption method*

ISO 7952, *Fruits, vegetables and derived products — Determination of copper content — Method using flame atomic absorption spectrometry*

ISO 16050, *Foodstuffs — Determination of aflatoxin B1, and the total content of aflatoxins B1, B2, G1 and G2 in cereals, nuts and derived products — High-performance liquid chromatographic method*

ISO 16649-1, *Microbiology of the food chain — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli — Part 1: Colony-count technique at 44 °C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide*

ISO 21527-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 1: Colony count technique in products with water activity greater than 0,95*

EN 16160, *Animal feeding stuffs — Determination of Hydrocyanic acid by HPLC*

CXC 1-1969, *General Principles of Food Hygiene*

CXS 1-1985, *General Standard for the Labelling of Pre-packaged Foods*

CXS 192-1995, *General Standard for Food Additives*

CXS 193-1995, *General Standard for Contaminants and Toxins in Food and Feed*

Codex Pesticides Residues in Food Online Database

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
ground cassava leaves
product prepared from fresh cassava leaves by pounding or grinding, and detoxified from cyanide by heat treatment

4 Essential composition and quality factors

4.1 Raw material

Fresh cassava leaves conforming to this document.

4.2 Essential composition factors

Ground cassava leaves shall conform to the compositional requirements given in Table 1.

Table 1 — Compositional requirements for ground cassava leaves

No.	Characteristics	Requirement	Method of test
1	Crude ash content, % by mass on a dry matter basis, max.	3,0	ISO 2171
2	Moisture content, % by mass, max.	5	ISO 1026
3	Crude fibre content, % by mass on a dry matter basis, max.	2,0	ISO 5498
4	Acid insoluble ash, % by mass, max.	0,35	ISO 763

4.3 General quality factors

Ground cassava leaves shall be:

a) free from filth (impurities of animal origin, including dead insects) in amounts that can represent a hazard to human health;

b) free from abnormal flavours, odours and living insects;

c) safe and suitable for human consumption;

d) tender;

e) fresh in appearance and smell;

f) sound/wholesome;

g) free of damage caused by unsuitable washing or soaking;

h) practically free of any visible foreign and extraneous matter;

i) free of any foreign smell and odour.

4.4 Specific quality factors

4.4.1 Particle size

Not less than 90 % by mass shall pass through a 0,60 mm sieve for fine ground leaves. Not less than 90 % by mass shall pass through a 1,20 mm sieve for coarse ground leaves.

4.4.2 Hydrocyanic acid content

The total hydrocyanic acid content shall not exceed 10 mg/kg, when tested in accordance with EN 16160.

5 Food additives

The product shall contain only permitted additives in accordance with CXS 192-1995.

6 Contaminants

6.1 Heavy metals

Ground cassava leaves shall be free from heavy metals in amounts that can represent a hazard to human health. They shall conform to the limits given in Table 2.

Table 2 — Limits for metal contaminants

S/N	Heavy metal	Maximum limits (mg/kg)	Method of test
1	Copper	2,0	ISO 7952
2	Lead	0,1	ISO 6633
3	Arsenic	0,1	ISO 6634
4	Mercury	0,01	ISO 6637

6.2 Pesticide residues

Ground cassava leaves shall conform to the maximum residue limits established by the Codex Alimentarius Commission in the Codex Pesticides Residues in Food Online Database for this commodity.

6.3 Mycotoxins

Ground cassava leaves shall conform to the maximum mycotoxin limits established by the Codex Alimentarius Commission in CXS 193-1995.

Ground cassava leaves, when tested in accordance with ISO 16050, shall conform to the following maximum limits of aflatoxins:

a) total aflatoxins content: 10 µg/kg;

b) aflatoxin B1 content: 5 µg/kg.

7 Hygiene

Ground cassava leaves shall be manufactured in premises conforming to the hygienic requirements stipulated in CXC 1-1969.

Ground cassava leaves shall conform to the microbiological limits given in Table 3.

Table 3 — Microbiological limits for ground cassava leaves

Microorganisms	Maximum limit	Method of test
Total aerobic count, in CFU/g, max.	10^4	ISO 4833-1 ISO 4833-2
Escherichia coli, per g	Shall be absent	ISO 16649-1
Salmonella, in 25 g	Shall be absent	ISO 6579-1
Yeast and mould, in CFU/g, max.	10^2	ISO 21527-1

8 Packaging

8.1 Ground cassava leaves shall be packaged in containers that will safeguard the hygienic, nutritional, technological and organoleptic qualities of the product.

8.2 The containers, including packaging material, shall be made of substances that are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odour or flavour to the product.

9 Labelling

Labelling shall be in accordance with the requirements of CXS 1-1985. Each container shall include the following:

a) the name of the food, which shall be “Ground cassava leaves”;

b) the net contents;

c) the name, location and address of the manufacturer;

d) the country of origin;

e) the lot identification number;

f) the date of minimum durability (i.e. the sell by date);

g) the statement “Human Food”.

10 Method of sampling

Ground cassava leaves shall be sampled in accordance with ISO 874.