

Foreword

The formulation of this national standard was initiated by the Agricultural Machinery Testing and Evaluation Center (AMTEC) with support from the Department of Agriculture.

This standard has been technically prepared in accordance with BPS Directives Part 3:2003 – Rules for the Structure and Drafting of International Standards.

The word “shall” is used to indicate mandatory requirements to conform to the standard.

The word “should” is used to indicate that among several possibilities one is recommended as particularly suitable without mentioning or excluding others.

In the preparation of this standard, the following documents/publications were considered:

.Ibarra E. Cruz. “A Study and Evaluation of a Small-capacity oil expeller”. 1980

Intermediate Technology Development Group. “Principles of Oil Extraction”.
<http://www.itdg.org>

Agricultural Machinery – Coconut Oil Expeller – Specifications

1 Scope

This standard specifies the requirements for oil expeller used for extracting oil from copra.

2 References

The following normative documents contain provisions, which, through reference in this text, constitute provisions of this National Standard:

PAES 102:2000 Agricultural Machinery – Operator’s Manual – Content and Presentation

PAES 103:2000 Agricultural Machinery – Method of Sampling

PAES 231:2005 Agricultural Machinery – Methods of Test

3 Definitions

For the purpose of this standard the following definitions shall apply:

3.1**choke**

permit a final adjustment of pressure and capacity in order to correct variations in the raw material and to secure the lowest possible oil content of the copra meal residue

3.2**copra**

dried coconut meat from which oil is extracted

3.3**copra meal**

residue collected after extracting oil from milled copra

3.4**crude oil**

freshly extracted coconut oil containing moisture, fiber, resins, colors, etc. from copra

3.5**expeller barrel**

barrel or cage consists of a heavy cradle-type frame into which flat steel bars are set edgewise around the periphery, therefore parallel to the worm shaft functioning as a screen

3.6**extraction chamber**

part of the oil expeller where the extraction process occurs

3.7**input capacity**

weight of input test material per unit loading time into the hopper/intake pit, expressed in kilogram per hour

3.8**oil expeller**

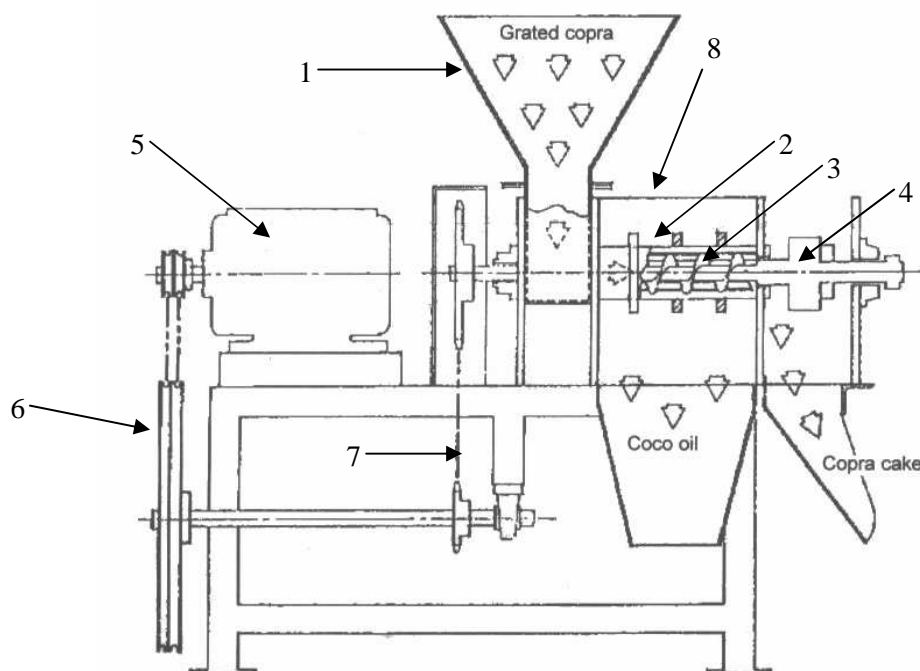
motor-driven extrusion type machine capable of extracting crude oil from copra for use in cooking, soapmaking, or as ingredient in other foods such as baked or fried goods

3.9**primemover**

electric motor, or internal combustion engine used to run the oil expeller

3.10**worm shaft**

a kind of a screw which has the double task of conveying the raw material through the pressure chamber formed by the barrel, and at the same time of exerting a pressure on it



Legend:

- | | |
|---------------------|----------------------------|
| 1 - hopper | 5 - primemover |
| 2 - expeller barrel | 6 - speed reduction pulley |
| 3 - worm shaft | 7 - chain and sprocket |
| 4 - choke | 8 - extraction chamber |

Figure 1 – Coconut Oil Expeller and its components

4 Materials of Construction

4.1 High-grade steel shall be generally used for the manufacture of the different components of the oil expeller.

4.2 The expeller barrel shall be made of tool steel.

5 Performance Requirements

The oil expeller when tested in accordance with PAES 231 shall conform to the following requirements:

5.1 The minimum percent crude oil recovery of oil expeller shall be 60%.

5.2 The noise emitted by the oil expeller measured 50 mm away from the operator's ear level shall not be more than 96 db (A)*.

5.3 The maximum temperature measured from the expeller barrel shall not exceed 71°C.

6 Design, Workmanship and Finish

6.1 All components shall be dynamically balanced for stable running with low noise levels.

6.2 There shall be provision to prevent metallic materials from entering the extraction chamber.

6.3 The oil expeller shall be free from manufacturing defects that may be detrimental to its operation.

6.4 Any uncoated metallic surfaces shall be free from rust and shall be painted properly.

6.5 The oil expeller shall be free from sharp edges and surfaces that may injure the operator.

6.6 Belt cover or guard and provisions for belt tightening and adjustments shall be provided.

7 Warranty for Construction and Durability

7.1 Warranty against defective materials and workmanship shall be provided for parts and services except for normal wear and tear of consumable maintenance parts such as belts within six months from the purchase of the oil expeller.

* Allowable noise level for four (4) hours of continuous exposure based on Occupational Safety and Health Standards, Ministry of Labor, Philippines, 1983.

7.2 The construction shall be rigid and durable without breakdown of its major components (i.e. extraction assembly, etc) for at least six months from original purchase.

8 Maintenance and Operation

8.1 Each oil expeller unit shall be provided with a set of manufacturer's standard tools required for maintenance.

8.2 An operator's manual, which conforms to PAES 102, shall be provided.

9 Sampling

The oil expeller shall be sampled for testing in accordance with PAES 103.

10 Testing

Sampled oil expeller shall be tested in accordance with PAES 231.

11 Marking

11.1 Each oil expeller shall be marked in English with the following information using a stencil or by directly punching it in a plate and shall be positioned at the most conspicuous place:

11.1.1 Registered trademark of the manufacturer

11.1.2 Brand

11.1.3 Model

11.1.4 Serial number

11.1.5 Input capacity, kg/h (based on copra input)

11.1.6 Power requirement, kW

11.1.7 Name and address of the manufacturer

11.1.8 Name and address of the importer, if imported

11.1.9 Country of manufacture (if imported) / "Made in the Philippines" (if manufactured in the Philippines)

11.2 Safety/precautionary markings shall be provided when appropriate. Marking shall be stated in English and Filipino and shall be printed in red color with a white background.

11.3 The markings shall have a durable bond with the base surface material.

11.4 The markings shall be weather resistant and under normal cleaning procedures, it shall not fade, discolor, crack or blister and shall remain legible.