THAI AGRICULTURAL STANDARD

TAS 4700-2011

DRIED PEANUT

National Bureau of Agricultural Commodity and Food Standards
Ministry of Agriculture and Cooperatives

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Peanut, a preferred commodity among consumers, contains potential risk of aflatoxin affecting consumer health. In order to produce safe Thai peanut for consumers and to gain recognition domestically and internationally, the Agricultural Standards Committee deems it necessary to establish an agricultural standard on Dried Peanut.

The standard is based on the information of the following document:

NOTIFICATION OF THE MINISTRY OF AGRICULTURE AND COOPERATIVES

SUBJECT: THAI AGRICULTURAL STANDARD:
DRIED PEANUT
UNDER THE AGRICULTURAL STANDARDS ACT B.E. 2551 (2008)

Whereas the Agricultural Standards Committee deems it necessary to establish an agricultural standard for Dried Peanut as a voluntary standard in accordance with the Agricultural Standards Act B.E. 2551 (2008) to promote such agricultural commodity to meet its standard on quality and safety.

By virtue of Section 5, Section 15 and Section 16 of the Agricultural Standards Act B.E. 2551(2008), the Minister of Agriculture and Cooperatives hereby issues this Notification on the Establishment of Agricultural Standard: Dried Peanut (TAS 4700-2011) as a voluntary standard, details of which are attached herewith.

Notified on 25 October B.E. 2554 (2011)
Mr. Theera Wongsamut
Minister of Agriculture and Cooperatives
THAI AGRICULTURAL STANDARD
DRIED PEANUT

1 SCOPE

This standard applies to peanut or groundnut of *Arachis hypogaea* L., with Thai common names as Thualisong, Thuadin Thuayisong, Thuataidin, or Thuakhut covering dried in-shell or in-pod peanuts and kernels intended to be used as food, processed peanut product, or peanut oil.

2 TYPES

Commercially dried peanut is classified into 2 types as follows:

2.1 Dried in-shell or in-pod peanut means a stripped peanut pod after sun-drying or mechanical drying, excluding fresh in-shell peanut.

2.2 Peanut kernel means a kernel obtained after the dried pod has been shelled, excluding seed for propagation.

3 QUALITY

3.1 General requirements
(1) safe and suitable for consumption
(2) uniform appearance
(3) free from abnormal odour and colour
(4) kernel moisture content shall not exceed 9 % by weight.

3.2 Defects

3.2.1 Definition of defects
(1) Hollowed pod means pod containing aborted seeds or having no seed inside.
(2) Immature pod means pod that is not physiologically mature, its inner shell surfaces are still white, seeds have not fully filled the pod cavity and are shrivelled when dried.
(3) Damaged pod means pod that has wound, crack, or germinating seed (Figure A.1A).
(4) Discoloured pod means pod that has abnormal colour resulting from damage caused by pests such as fungi, insects, or nematodes (Figures A.1B and A.1D).
(5) Mouldy kernel means kernel that has sign of damage by fungi (Figure A.3C).
(6) Damaged kernel means kernel that germinates, is shrivelled (Figure A.3B), has signs of damage from pests (Figure A.3E), has abnormal odour or colour, or is damaged by cold or machines.
(7) Broken kernel means the kernel that more than one-fourth is lost or broken into 2 halves (Figure A.3D).

(8) Foreign matters mean other materials that are not pods or kernels of peanuts.

3.2.2 Defect tolerances

3.2.2.1 Defects on dried in-shell peanuts shall not exceed the tolerances indicated in Table 1.

<table>
<thead>
<tr>
<th>Defects</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hollowed pods and shells</td>
<td>2</td>
</tr>
<tr>
<td>Immature and damaged pods</td>
<td>10</td>
</tr>
<tr>
<td>Discoloured pods</td>
<td>2</td>
</tr>
<tr>
<td>Foreign matters</td>
<td>0.5</td>
</tr>
<tr>
<td>Kernels and their fragments</td>
<td>0.5</td>
</tr>
</tbody>
</table>

3.2.2.2 Defects on each class of peanut kernels shall not exceed the tolerances indicated in Table 2.

<table>
<thead>
<tr>
<th>Defects</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouldy kernels</td>
<td></td>
</tr>
<tr>
<td>Damaged kernels</td>
<td></td>
</tr>
<tr>
<td>- from cold</td>
<td>0.5</td>
</tr>
<tr>
<td>- shrivelled kernels</td>
<td>0</td>
</tr>
<tr>
<td>- from pests</td>
<td>0</td>
</tr>
<tr>
<td>- from machines</td>
<td>0.5</td>
</tr>
<tr>
<td>- germinating kernels</td>
<td>0</td>
</tr>
<tr>
<td>Broken kernels</td>
<td>0.5</td>
</tr>
<tr>
<td>Foreign matters</td>
<td>0</td>
</tr>
<tr>
<td>Peanut pods and shells</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 1 Tolerances of dried in-shell peanuts
(Section 3.2.2.1)

Table 2 Tolerances of peanut kernels by classes
(Section 3.2.2.2)

Note: Peanut kernels in Class 1 and Class 2 are used as food.
The kernels lower quality than that of Class 2 shall not be consumed or processed into peanut product for human consumption, except that they are used as feed. They could be pressed or extracted for edible oil, but the oil shall be refined before being used for human consumption.
4 SIZING AND SIZE TOLERANCES

4.1 Peanut kernel sizes

In case of sizing, only the complete kernels remain on the sieve with the indicated sizes specified in Table 3 will be considered.

Table 3 Peanut kernel and sieve sizes
(Section 4.1)

<table>
<thead>
<tr>
<th>Size code*</th>
<th>Peanut kernel size (width) (mm)</th>
<th>Sieve sizes (mm x mm)</th>
<th>(inch x inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≥8.53</td>
<td>8.53 x 19.05</td>
<td>21.5/64 x 3/4</td>
</tr>
<tr>
<td>2</td>
<td>7.14 - &lt;8.53</td>
<td>7.14 x 19.05</td>
<td>18/64 x 3/4</td>
</tr>
<tr>
<td>3</td>
<td>6.35 - &lt;7.14</td>
<td>6.35 x 19.05</td>
<td>16/64 x 3/4</td>
</tr>
<tr>
<td>4</td>
<td>5.95 - &lt;6.35</td>
<td>5.95 x 19.05</td>
<td>15/64 x 3/4</td>
</tr>
<tr>
<td>5</td>
<td>5.56 - &lt;5.95</td>
<td>5.56 x 19.05</td>
<td>14/64 x 3/4</td>
</tr>
</tbody>
</table>

*Note: Size codes 1, 2 and 3 are for large-kernel peanuts, and 3, 4, and 5 are for the small-kernel.

4.2 Size tolerances

In each size code, there shall not be more than 10 % by weight of kernels with larger or smaller sizes than that specified for the particular code.

5 CONTAMINANTS

Total aflatoxin content of peanut kernels in Class 1 and Class 2 shall not exceed 20 µg/kg.

The maximum limits of total aflatoxin in dried peanuts other than the abovementioned shall be in compliance with relevant laws and regulations and the Thai Agricultural Standards relating to contaminants.

6 PESTICIDES

Maximum Residue Limits (MRLs) of pesticides in dried peanut shall be in compliance with the relevant laws and regulations as well as the requirements under the Thai Agricultural Standard on Pesticide Residues: Maximum Residue Limits (TAS 9002) and Pesticide Residues: Extraneous Maximum Residue Limits (TAS 9003).

7 HYGIENE

7.1 Storage

Dried peanuts should be stored in a clean, hygienic storage that can prevent peanuts from direct sunlight, rain, damp and contamination from storage animal pests. It should be well ventilated to lessen moisture and heat accumulation. For bagged dried peanuts, the bags
should not be placed directly on the floor but they should be stacked on pallets and left with an ample space between the stack and the wall for good ventilation, easy cleaning, and inspection. The stored dried peanuts should be periodically inspected to assess for possible damages and to monitor the harbouring of disease carrier animals so that a proper solution could be made for the particular problem.

7.2 Transportation

The dried peanut containers and vehicles used during transportation should be clean and well covered to protect the commodities from damp and contamination of hazardous materials.

8 PACKAGING

8.1 Dried in-shell peanut

In case of using bags, they shall be clean, strong and able to sew or seal off.

8.2 Peanut kernels

Peanut kernels shall be packed in containers that can maintain their quality. The containers shall be clean and prevent contamination from external sources, withstand the transportation, and prevent the damage affecting quality of the kernels. Printing inks or adhesives used for labelling shall not be harmful to consumers.

9 LABELLING

Labelling shall be in accordance with the relevant laws and regulations. It shall contain, at least, the following details in a manner that is legible and clear without false or deceptive information:

9.1 For non-retail containers of dried in-shell peanut, the following details shall be appeared on the containers or accompanying documents:
(1) Net weight
(2) Producer information indicating name and address of the producer or packer
(3) Production or packaging date (day, month, year).

9.2 For retail packages of peanut kernels, the following details shall be appeared:
(1) Net weight
(2) Producer or distributor information indicating name and address of the producer, packer, or distributor
(3) Class
(4) Production or packing date (day, month, year).

9.3 For non-retail containers of peanut kernels, the following details shall be appeared on the containers or accompanying documents:
(1) Kernel size
(2) Net weight
(3) Producer information indicating name and address of the producer or packer
(4) Quality class
(5) Production or packaging date (day, month, year).

9.4 In case the production is intended for domestic market, the labelling shall be in Thai. Label of the product for export can be in foreign language.

10 OFFICIAL INSPECTION MARK OR CERTIFICATION MARK

This provision shall be complied with the requirements of the Agricultural Standards Committee or the criteria and conditions of set by inspection body or certification body.

11 METHODS OF ANALYSIS AND SAMPLING

11.1 Methods of analysis

Methods of analysis indicated in Table 4 shall be as follows:

Table 4 Methods of analysis for dried peanuts

(Section 11.1)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Method of analysis*</th>
<th>Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General requirements (Section 3.1)</td>
<td>Visual inspection and sensory evaluation</td>
<td>Direct physical examination</td>
</tr>
<tr>
<td>2. Moisture (Section 3.1 )</td>
<td>ISO 665 or equivalent methods</td>
<td>Gravimetry</td>
</tr>
<tr>
<td>3. Defects of dried in-shell peanuts (Section 3.2.2.1)</td>
<td>Inspect at least 1 kg of dried in-shell peanuts. Separate the defected pods following the criteria indicated in Table 1, weigh and calculate the percentage by weight.</td>
<td>Direct physical examination</td>
</tr>
<tr>
<td>4. Defects of peanut kernels (Section 3.2.2.2)</td>
<td>Inspect at least 500 g of peanut kernels. Separate the defected kernels following the criteria indicated in Table 2, weigh and calculate the percentage by weight.</td>
<td>Direct physical examination</td>
</tr>
<tr>
<td>5. Sizing and tolerances (Section 4)</td>
<td>Appendix B</td>
<td>Sieving</td>
</tr>
<tr>
<td>Criteria</td>
<td>Method of analysis*</td>
<td>Principle</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>6. Total aflatoxin content (Section 5)</td>
<td>AOAC 991.31</td>
<td>Immunoaffinity column (Aflatest)</td>
</tr>
<tr>
<td></td>
<td>AOAC 993.17</td>
<td>Thin layer chromatography</td>
</tr>
<tr>
<td></td>
<td>AOAC 975.36</td>
<td>Romer minicolumn</td>
</tr>
<tr>
<td></td>
<td>EN 12955: 1999-07</td>
<td>HPLC with post column derivatization and immunoaffinity column clean up Holaday-Velasco minicolumn</td>
</tr>
<tr>
<td></td>
<td>ISO 16050:2003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AOAC 979.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Or equivalent methods</td>
<td></td>
</tr>
</tbody>
</table>

* Note: The methods of analysis are cited to the recent references.

11.2 Sampling

Sampling procedures specified in Appendix C shall be followed.
APPENDIX A

PHOTOS OF DRIED IN-SHELL PEANUT AND PEANUT KERNEL
(Section 4)

Figure A.1 Appearances of dried in-shell peanuts

A. Germinated
B. Mouldy
C. Cracked
D. Discoloured (left) compared with good (right)

Source: Data from the report of a project of the National Bureau of Agricultural Commodity and Food Standards in collaboration with Khon Kaen University on the Analysis/Revision of Information on Characteristics, Quality and Safety to Establish the Standard for Peanuts
Figure A.2 Appearances of dried in-shell peanuts damaged by pests

A. Damage caused by subterranean ants
B. Damage caused by parasitic nematodes

1 Source: Data from the report of a project of the National Bureau of Agricultural Commodity and Food Standards in collaboration with Khon Kaen University on the Analysis/Revision of Information on Characteristics, Quality and Safety to Establish the Standard for Peanuts
Figure A.3 Appearances of peanut kernels\textsuperscript{1/}

A. Good  
B. Shrivelled  
C. Mouldy  
D. Broken  
E. Damage caused by pests

Figure A.4 Size code of peanut kernels\textsuperscript{1/}

A. Size code 1  
B. Size code 2  
C. Size code 3  
D. Size code 4  
E. Size code 5

\textsuperscript{1/} Source: Data from the report of a project of the National Bureau of Agricultural Commodity and Food Standards in collaboration with Khon Kaen University on the Analysis/Revision of Information on Characteristics, Quality and Safety to Establish the Standard for Peanuts
APPENDIX B

DETERMINATION ON PEANUT KERNEL SIZES AND TOLERANCES

B.1 Equipment

B.1.1 Sieves with different sieve sizes as indicated in Table 3

B.1.2 A Two-decimal place balance of 0.01 g precision

B.2 Procedure

B.2.1 Draw a kernel sample following the procedure specified in the Appendix C. The sample size should be at least 500 g. Sift the sample through sieves of different sizes as indicated in B.1.1.

B.2.2 Weigh each size of the separated kernels using the balance indicated in B.1.2.

B.2.3 Calculate the percentage by weight to consider the conformity and tolerances of size in each lot.
APPENDIX C

SAMPLING PROCEDURES FOR PEANUT KERNELS AND DRIED IN-SHELL PEANUTS

C.1 Definition

Definition used for sampling of dried peanuts is as follows:

C.1.1 Lot means a quantity of peanuts delivered at one time. The sampling officer knows or presumes that the lot has the same origin, producer, variety, packer, type of packing, or marking.

C.1.2 Primary sample, increment or incremental sample means one or more units of peanut kernels or dried in-shell peanuts drawn from each sack, bag, or positions in a lot specified in Tables C.1 and C.2.

C.1.3 Bulk sample means a combined primary samples of peanut kernels or dried in-shell peanut drawn from a lot.

C.1.4 Laboratory sample means a representative sample of peanut kernels or dried in-shell peanuts that its quantity is properly reduced from a well mixed bulk sample of each lot.

C.2 Sampling procedure

C.2.1 Recommended practices

Sampling of peanut kernels or dried in-shell peanuts should be done in such a way that the samples taken are representative of the lot, as far as practicable. Each primary sample should be taken from a randomly chosen position in the lot. Subsequently, the primary samples are combined and well mixed to obtain a bulk sample which is properly reduced to get at least 1 kg of peanut kernels or 2 kg of dried in-shell peanuts to be sent for analysis as a laboratory sample. For traceability, the laboratory samples should be kept for reanalysis in case of doubt.

Recommendations in the ISO 13690: Cereal, Pulses and Milled Products Sampling of Static Batches should be followed for using sampling devices, drawing samples, and reducing the bulk sample size to get a laboratory sample.

C.2.2 For peanut kernels or dried in-shell peanuts packed in sacks or bags, the minimum number of sacks/bags where primary samples are drawn in a lot are specified in Table C.1.
Table C.1 Number of sacks/bags where primary samples of peanut kernels or dried in-shell peanuts packed in sacks or bags are taken in a lot  
(Section C.2.2)

<table>
<thead>
<tr>
<th>Number of sacks or bags in a lot*</th>
<th>Number of sacks or bags where primary samples are drawn (sack or bag)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 10</td>
<td>All</td>
</tr>
<tr>
<td>11 to 100</td>
<td>10</td>
</tr>
<tr>
<td>101 to 121</td>
<td>11</td>
</tr>
<tr>
<td>122 to 144</td>
<td>12</td>
</tr>
<tr>
<td>145 to 169</td>
<td>13</td>
</tr>
<tr>
<td>170 to 196</td>
<td>14</td>
</tr>
</tbody>
</table>

*Note: If numbers of sacks or bags in a lot are more than 196, the number where primary samples are taken should be calculated from the square root of the total sack/bag number.

C.2.3 For peanut kernels or dried in-shell peanuts loaded in a container and transported by a vehicle (such as truck or ship), the minimum number of positions where primary samples are taken in a lot should be as specified in Table C.2.

Table C.2 Number of positions where primary samples of peanut kernels or dried in-shell peanuts are taken in a lot  
(Section C.2.3)

<table>
<thead>
<tr>
<th>Quantity (ton)</th>
<th>Number of positions taken primary samples (position)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 15</td>
<td>5</td>
</tr>
<tr>
<td>15 to 30</td>
<td>8</td>
</tr>
<tr>
<td>30 to 500</td>
<td>11</td>
</tr>
</tbody>
</table>

C.2.4 Sampling procedures to determine the compliance with maximum limit of aflatoxin.

In case there is an indication that the peanut kernels or dried in-shell peanuts have a risk of being contaminated with high amount of aflatoxin, the sampling procedures specified in the Annex of CODEX STAN 193 Codex General Standard for Contaminants and Toxins in Foods shall be used.
APPENDIX D
UNIT

The units and symbols used in this standard and the units recognized by the International System of units (Le Système International d’ Unités) or SI are as follows:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Unit</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>kilogram</td>
<td>kg</td>
</tr>
<tr>
<td></td>
<td>gram</td>
<td>g</td>
</tr>
<tr>
<td>Concentration</td>
<td>microgram/kilogram</td>
<td>µg/kg</td>
</tr>
</tbody>
</table>