Pulses and cereal and their products -
Quick frozen whole kernel corn

Prepared by:
Gulf technical committee for sector standards of
Food and agriculture products

This document is a draft Gulf standard circulated for comments, it is therefore, subject to alteration and modification, and may not be referred as a Gulf standard, until approved by the Board of Directors

ICS: 67:060
Foreword

GCC Standardization Organization (GSO) is a regional Organization which consists of the National Standards Bodies of GCC member States. One of GSO main functions is to issue Gulf Standards/ Technical regulations through specialized technical committees (TCs).

GSO through the technical program of committee TC No.(5) “Gulf technical committee for sector Standards of Foods and Agricultural products” has prepared the Gulf Standard for "Pulses and cereal and their products- Quick frozen whole kernel corn". The draft Standard has been prepared by State of Qatar.

This Standard has been approved as a Gulf Technical Regulation by GSO Board of Directors in its meeting No. ( ), held on / / H, / / G.
Pulses and cereal and their products-
Quick frozen whole kernel corn

1-Scope and field of application:

This Gulf Standard is concerned with the requirements which should be met in quick
frozen whole kernel sweet corn of the species *zea mays* L. *convar.* *saccharata* Koern
and fit for direct consumption without further processing, except repacking, if
required.

This Standard does not apply to the product when indicated as intended for further
processing or for other industrial purposes.

2-Complementary references:
2.1 GSO 9" Labelling of prepackaged food stuffs".
2.2 GSO 20" Methods for the determination of contaminating metallic
elements in food stuffs".
2.3 GSO 21" Hygienic regulations for food plants and their personnel".
2.4 GSO 150" Expiration periods of food products".
2.5 GSO 168" Conditions of storage facilities for dry and packed food stuffs".
2.6 GSO 193" Methods of test for enriched and enriched treated wheat flour
2.7 GSO 332" Fruits and vegetables and derived products- Determination of
alcohol- insoluble solids content- Method for fresh and frozen peas".
2.8 GSO 382, 383" Maximum limits for pesticide residues in agricultural and
food products- Parts 1, 2".
2.9 GSO 839" Food packages- Part 1: General requirements".
2.10 GSO 841" Maximum limits of fungi toxins permitted in food and animal
feeds- Aflatoxin".
2.11 GSO 988" Limits of radioactivity levels permitted in food stuffs- Part 1".
2.12 GSO 998" Methods for the detection of permissible radionuclide in food-
Part 1: Gamma spectrometry analysis: A, Cs 134, Cs 137".
2.13 GSO ISO 1000" Cereals- Sampling (as cereals)".
2.14 GSO 1004" Fruits and vegetable products- Determination of soluble
solids content- Refractometric method".
2.15 GSO 1016"Microbiological criteria for food stuffs- Part 1".
2.16 GSO 1863" Food packages- Part 2: Plastic packages- General
requirements".
2.17 GSO/CAC 193: General Standard for contaminants and toxins in food
and feed".
2.18 Gulf Standards which Organization shall be approved concerned with:
2.18.1 "General Standard for food additives".

2.18.2 Methods for the determination of fungi toxins in food and animal feeds".
2.18.3 Methods for the determination of pesticide residues".

3-Definitions:

3.1 Quick frozen whole kernel corn:
A product prepared from fresh, clean whole sound, succulent kernels of sweet corn species *zea mays L. convar.saccharata Koern* of either the white or yellow varieties by removing husk and silk, by sorting, trimming and washing, and by sufficiently blanching before or after removal from the cob to ensure adequate stability of color and flavor during normal marketing cycles, then quick freezing process until the product temperature has reached (-18) °C at the thermal centre after thermal stabilization.

3.2 Damage or blemish kernels:
Any kernels affected by insect injury or damaged by discoloration, pathological injury, mechanical injury or by any other means to the extent that the appearance or eating quality is affected. This defect classified depending upon the extent to which the appearance is affected to:

3.2.1 Minor defect: Damage or blemish that affects the kernels to only as a slight degree.

3.2.2 Major defect: Damage or blemish that is quite noticeable and materially affects the kernels.

3.2.3 Serious defect: Damage or blemish that is very noticeable affects the kernels.

3.3 Corn cob:
Very firm hard cellulose- like material to which the kernels of corn are attached and from which the kernels are removed during processing.

3.4 Husk:
The membrane outer covering and one of the constituent parts of an ear of corn that is removed during processing.

3.5 Silks:
The coarse thread-like filaments that are one of the constituent parts of corn, such silk is found beneath the husk and in immediate contact with the corn kernels.
3.6 Harmless extraneous vegetable materials (H EVM):

Vegetable matter other than cob, husk or silk which is harmless, and may include, but is not limited to, grass, weeds, leaves and portions of stalk, its classified as defect to:

3.6.1 Minor: Only slightly noticeable and affects the product to only slight degree.

3.6.3 Major: Readily noticeable and affects the product to a material degree.

3.6.3 Serious: Very noticeable and objectionable and would customarily be discard under normal culinary preparation.

3.7 Pulled kernels:

Kernels of corn that have been so cut or removed from the ear of corn that portions of cob or hard tissue remains, its classified as defect to:

3.7.1 Minor: Slight amount of cob material or hard tissue remains around the base of the kernel.

3.7.2 Major: Moderate to noticeable amount of adhering cob material.

(If there is excessive amount of cob material adhering, apply tolerance in the table).

4-Requirements:

The following requirements shall be met in the product:

4.1 The production shall be carried out according to the requirements mentioned in Gulf Standard stated in Item (2.3).

4.2 The product shall be free from objectionable materials.

4.3 Tolerances of visual defects in standard sample 250 gm, shall not exceed the limits mentioned in Table No. (1).

4.4 The maximum limits of defects in the product shall not exceed to what mentioned against each (in 250 gm sample):

- Pieces of cob : 0.6 cubic centimeters
- Husk : 4.4 square centimeters
- Silk : 160 centimeters
- Ragged, crushed or broken kernels : 60 pieces
4.5 The product shall be free from foreign flavor and odor before and after cooking, taking into consideration any added optional ingredients.

4.6 The product shall be free from sand, grit and other foreign materials.

4.7 The kernels shall be succulent and have similar characteristics.

4.8 The product shall be free from loose skins.

4.9 The following optional ingredients may be used:
   - Spices and condiments.
   - Edible salt.
   - Garnishes such as pieces of green or red peppers, or mixed of both, which may be sweet or hot and may be dried, other vegetables may be used, provided shall not exceed 5% of the finished product.

4.10 The soluble solids content of the juice pressed from the kernels by refractometer at 20°C, shall not less than 20.

4.11 The alcohol insoluble solids content of the whole kernels shall not exceed 30% m/m.

4.12 The additives to the product shall be allowed according to Gulf Standard stated in Item (2.18.1).

4.13 Pesticide residues in the product shall not exceed the allowable limits according to Gulf Standard stated in Item (2.8).

4.14 The maximum limits for contaminating metals according to Gulf Standard stated in Item (2.17).

4.15 The maximum limits for Aflatoxins limits according to Gulf Standard stated in Item (2.10).

4.16 The product shall be free from live and dead insects, their residues and parts and from rodent residues.

4.17 Microbiological criteria of the product shall comply with Gulf Standard stated in Item (2.15).

4.18 The radioactivity contaminant limits for the product shall comply with Gulf Standard stated in Item (2.11).
### Table No. (1)

Permitted visual defects (in sample 250 gm)

<table>
<thead>
<tr>
<th>Defects</th>
<th>Unit of evaluation</th>
<th>Defect categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Minor</td>
</tr>
<tr>
<td>Damage or blemish:</td>
<td>Each kernel</td>
<td></td>
</tr>
<tr>
<td>minor damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>major damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>serious damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmless EVM:</td>
<td>Each piece</td>
<td>1</td>
</tr>
<tr>
<td>minor EVM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>major EVM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>serious EVM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulled kernels:</td>
<td>Each kernel</td>
<td>1</td>
</tr>
<tr>
<td>minor pulled kernels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>major pulled kernels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total allowable points</td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

### 5- Sampling:
Samples shall be taken according to Gulf Standard stated in Item (2.13).

### 6- Methods of examination and test:
6.1 Determination of alcohol-insoluble solids content shall be carried out according to Gulf Standard stated in Item (2.7).
6.2 Determination of soluble solids content shall be carried out according to Gulf Standard stated in Item (2.14).
6.3 Determination of aflatoxins shall be carried out according to Gulf Standard stated in Item (2.18.2).
6.4 Determination of pesticides residues shall be carried out according to Gulf Standard stated in Item (2.18.3).
6.5 Determination of contaminated metallic elements shall be carried out according to Gulf Standard stated in Item (2.2).
6.6 Detection of radioactivity limits shall be carried out according to Gulf Standard stated in Item (2.12).
7- Packaging, transportation and storage:

7.1 Packaging:
7.1.1 Without prejudice to what mentioned in Gulf Standards stated in Items (2.9, 2.16), the product shall be packaged in suitable containers to keep the it and protect it from any contamination lead to change its properties or its fitting for human consumption.
7.1.2 The containers shall be kept the physical properties for the product, and not leak or transfer to it any odors, taste, color or any foreign characteristics during processing or distribute the product until the time of final using.

7.2 Transportation:
Product transportation shall be carried out by means of sound and clean means, do not previously used in transportation of any poisoning or harmful materials, and the transportation shall be carried out with a way do not lead to spoilage of the product.

7.3 Storage:
Without prejudice to what mentioned in Gulf Standards stated in Items (2.5), the stores shall be good ventilation and far from heat and contamination sources.

8- Labelling:
Without prejudice to what mentioned in Gulf Standards stated in Items (2.1, 2.4), the following shall be declared on the label in Arabic language, and may write in another language beside the Arabic language:
8.1 The name of the product (quick frozen whole corn kernels).
8.2 Product color (yellow or white).
8.3 Conditions of keeping, storage and handling.
8.4 Additives other than salt.
8.5 Cooking directions.
8.6 In the case of quick frozen whole kernel corn in bulk, the information required above shall either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words quick frozen or frozen. The name and address of the manufacturer or packer shall appear on the container.