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طحين (دقيق) القمح
WHEAT FLOUR

Prepared by:
Gulf technical committee for food and agricultural products

ICS 67.060

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By the Board of Directors

Foreword

Standardization Organization for (GCC) is a regional Organization which consists of National Standard Bodies of GCC member States.

One of GCC main function is to issue Gulf Standards through specialized technical committees (TCs).

GSO through the technical program of committee TC No. (5) 'Technical Gulf committee for food and agricultural products standards' has update the GSO Standard no 194/2006 (wheat flour) The draft standard has been prepared by the state of Kuwait.

This standard has been approved as Gulf technical regulation by GSO Board of Directors in its meeting No..../ held on/.....H, / / G.the approved standard will replace and supersede the GSO standard no 149/2006

Wheat Flour

1- Scope

This standard concerned with wheat flour (*Triticum aestivum* L., *Triticum compactum* Host, or mixtures thereof) enriched wheat flour and enriched treated wheat flour for direct human consumption .

2 Complementary References

- 2.1 GSO 9 Labeling of prepackaged food stuffs
- 2.2 GSO21 Hygienic regulation for food plants and their personnel
- 2.3 GSO20 Methods for the determination of contaminating metallic elements in foodstuffs.
- 2.4 GSO150 Expiration dates for food products -Part 1 : Mandatory expiration dates
- 2.5 GSOISO2170 Cereals And Pulses- Sampling Of Milled Products .
- 2.6 GSO 382 Maximum limits for pesticide residues in agricultural food products - Part 1.
- 2.7 GSO 383 Maximum limits for pesticide resticide residues in agricultural food products part1.
- 2.8 GSO839 Food Packages - part 1: general requirements .
- 2.9 GSO 841 Maximum limits of aflatoxins permitted in food and animal feeds- Aflatoxins
- 2.10 GSO 1016 “Microbiological Criteria for Foodstuff – Part 1”
- 2.11 GSO 193 Methods of test for enriched and enriched treated wheat flour .

3 Definitions

- 3.1 Wheat Flour : Product of milling clean and conditioned wheat grains, which are free foreign materials which are prepared then sieved (except for wholemeal wheat flour) according to the required extraction ratios and unmixed with any other material.
- 3.2 Enriched wheat flour: Wheat flour to which some minerals, vitamins and other suitable nutrients are added.
- 3.3 Enriched improved wheat flour: A wheat flour that conforms to the definition of enriched wheat flour (3.2) to which some unharmed improving agents are added.

3.4 Self rising wheat flour: Wheat flour which is mixed with sodium bicarbonate and one or more of the acid reacting substances as monocalcium phosphate, sodium acid phosphate, cream of tartar and glucono-delta-lactone.

3.5 Enriched self-rising wheat flour: Self rising wheat flour (3.4) to which some minerals, vitamins and other suitable nutrients are added.

3.6 Germ Wheat

It is the interior part (germ) of wheat grain consisting about 2.5% of the grain. It characterizes in having high proportions of fat and protein. The approximate composition of its contents is: 43.8% carbohydrate, 25.9% protein, 13.5 water, 10.8 oil, 4.1% ash, 1.9% fibres.

4- CLASSIFICATIONS

Wheat flour is graded according to the ratio of extraction to the following grades:

| Type | Extraction ratio |
|--------------|------------------|
| Patent flour | Not more than 74 |
| White flour | 75–84% |
| Wheat meal | 85-95% |
| Whole meal | 96-100% |

5- REQUIREMENTS

The following shall be met in wheat flour:

- 5.1 It shall be produced from fully mature, sound wheat grains, clean and free from impurities.
- 5.2 It shall be free from insects, its parts; or its wiggler, fungus, and rodents excreta.
- 5.3 It shall be free from extraneous material except the natural constituents of wheat grains.
- 5.4 It shall retain its natural properties and be free from rancidity and unacceptable odours or taste.
- 5.5 It shall be homogeneous in colour and free from lumps.
- 5.6 Moisture content shall not exceed 15%.
- 5.7 The quantity of KOH required to neutralize the free fatty acid in 100 g flour shall not be more than 60 mg on dry matter basis.
- 5.8 Wheat flour grades shall comply with the properties given in Table I.

Table I

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| Extraction ratio | %Protein (Min) | % Total ash (max) | % Total ash (Min) |
|------------------|-------------------|------------------------|-----------------------|
| Up to 74% | 8 | 0.65 | 0.6 |
| 75-84% | 10 | 1.2 | 1.5 |
| 85-95% | 11 | 1.8 | 2.00 |
| 96-100% | 12 | 2.00 | 3.00 |

Note: All percentages of the constituents are calculated on dry mass basis

- 5.9 More than 85% of the flour of different types shall pass through a sieve of 250 urn mesh.
- 5.10 The limits of pesticide residues shall not exceed the limits stated in GSO standard mentioned in items 2.6, 2.7.
- 5.11 The contaminating metallic elements shall not exceed the corresponding proportions.
- | | |
|---------|------------|
| Lead | 0.20 mg/kg |
| Mercury | 0.05 mg/kg |
| Arsenic | 1.00 mg/kg |
| Cadmium | 0.10 mg/kg |
- 5.12 The production shall be carried out according to the hygienic regulation stated in GSO standard mentioned in item 2.2.
- 5.13 Microbiological criteria shall not exceed the limits stated in GSO standard mentioned in item 2.10.
- 5.14 Aflatoxins limits shall not exceed the limits stated in GSO standard mentioned in item 2.9.
- 5.15 In addition to the requirements mentioned in items 5.1 to 5.14, the following requirements should be fulfilled in the enriched wheat flour and the treated enriched wheat flour:
- 5.15.1 Enriched wheat flour**
- 5.15.1.1 One or more of the enrichment substances specified in Annex 3 may be added with the corresponding proportions, with necessity of enriched wheat of extraction percentage less than 84% with iron in defined percentage that have been mentioned in annex for each types, and also the necessity of enrich wheat of extraction percentage less than 84% with folic acid in define percentage that have been mentioned in annex 3
- 5.15.1.2 Iron and calcium shall only be added in forms that are un harmful and easy to absorb.
- 5.15.2 Wheat flour treated and enriched with improves and whiteners.
- 5.15.2.1 It shall fulfill the properties stated in 5.16.
- 5.15.2.2 One or more of the improving agents mentioned in Annex I may be added with the corresponding proportions.

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- 5.15.2.3 Calcium propionate or sodium propionate or a mixture thereof may be added according to what is stated in Annex 4.
- 5.15.3 Self-rising wheat flour
- 5.15.3.1 CO₂ ratio generated shall not be less than 0.5% .
- 5.15.3.2 Acid reacting substances (item 3.4) shall sodium bicarbonate provided that the gross weight of these substances and sodium bicarbonate doesn't exceed 4.5 part per 100 parts of the flour used.
- 5.15.3.3 Fluorine content shall not exceed 3 mg/Kg flour.
- 5.15.4 Self-rising enriched wheat flour
- 5.15.4.1 It shall meet the requirements specified in items 5.16.1 and 5.16.3, but in case of adding calcium compound for industrial purposes to provide the flour with the self-rising properties; the calcium content in each Kg of flour may exceed 2115.00 provided that the excess rate shall not be more than necessary to give the requirements affect.

6- SAMPLING

Sampling shall be carried out according to GSO standard mentioned in item 2.5.

7- METHODS OF TESTING AND EXAMINATION

Tests and examination shall be carried out according to GSO standard mentioned in item 2.11.

8- PACKAGING, TRANSPORTATION AND STORAGE

The following shall be met during packaging, transportation and storage.

8.1 Packaging

Wheat flour shall be packaged in clean, hygienic, dry, well sealed, low moisture transmitting packages and protecting the product from contamination. The packages must keep the product clean, and does not affect its natural characteristics. The packages shall resist the entry of insects.

8.2 Transportation

The packages of wheat flour shall be transported in such a way as to protect it against weather effects, contamination and damage caused by insects and rodents. The means of transport shall not be previously for transport of insecticides, pesticides or toxic materials.

8.3 Storage

The packaged wheat flour shall be stored in clean and well ventilated storehouse away from sources of heat , moisture and harmful materials the stores shal satisfy protective requirements against insect and rodents.it shall be located away from stores of insecticides or other harmful materials.

9. LABELLING

Without prejudice to the requirements of GSO Standards mentioned in items 2.1 and 2.4 the following information shall be declared on the label of each package:

Extraction ratio and type (White - Wheatmeal - Wholemeal). Additives if used.

Additives if used

Names of enrichment substances and its ratio in 100 g if added

Annex (1)
Improving Agents

| Substance | INS | Maximum limits |
|--|-------|-------------------------------------|
| Calcium iodate | 916 | See annex (3) |
| Calcium lactate | 327 | |
| Calcium Sulphate | 516 | |
| Calcium Oxide | 529 | |
| L-Cysteine and its hydrochlorides- sodium and potassium salts | 920 | 90 mg/kg singly or incombination |
| L-cytine and its hydrochlorides - sodium and potassium salts | 921 | |
| Chlorine | 925 | 2500 mg/kg |
| Chlorine Dioxide | 926 | 30 mg/kg |
| Potassium iodate | 917 | 60 mg/kg singly or incombination |
| Nitrogen Oxide | 918 | |
| Nitrosyl chloride | 919 | |
| Potassium persulphate | 922 | |
| Ammonium persulphate | 923 | |
| Benzoyl peroxide | 928 | |
| Acetone peroxide | 929 | |
| Monoisopropyl citrate | 930 | |
| Ammonium lactate | 328 | |
| Magnesium lactate | 329 | |
| Ammonium phosphates | 342 | |
| Stearyl Tartrate | 483 | |
| Ammonium chloride | 510 | |
| Ammonium sulphate | 517 | |
| Gluconic acid (d-) | 574 | |
| Glucono delta Lactone | 575 | |
| Azodicarbonamide | 927 | 45 mg/kg |
| Amylase | 1 100 | (13-26)SKB units /IOOg |
| Proteases | 1101 | |
| L- Ascorbic and its sodium and potassium Salts | | 300 mg / kg |

Annex (2)
Anticaking agents

| Substance | INS | Maximum limits |
|------------------------------------|-----|--|
| Calcium carbonates | 170 | See annex (3) |
| Calcium ferrocyanide | 538 | See annex (3) |
| Calcium phosphate (Bone phosphate) | 542 | See annex (3) |
| Calcium silicate | 552 | See annex (3) |
| Calcium Aluminium silicate | 556 | See annex (3) |
| Magnesium phosphates | 343 | See annex (3) |
| Cellulose | 460 | See annex (3) |
| Sodium metabisulphite | 223 | 200 mg/kg calculated as SO ₂ |
| Sodium carbonates (ii) | 500 | 4.5 mg/kg |
| Magnesium oxide | 530 | GMP |
| Sodium ferrocyanide | 535 | |
| Potassium ferrocyanide | 536 | |
| Ferrous hexacyanomanganate | 537 | |
| Sodium silicates | 550 | |
| Silicon dioxide | 551 | |
| Magnesium silicate | 553 | |
| Sodium aluminosilicate | 554 | |
| Potassium aluminium silicate | 555 | |
| Zinc silicate | 557 | |
| Bentonite | 558 | |
| Aluminium silicate | 559 | |
| Isomalt | 953 | |
| Potassium silicate | 560 | |
| Ferric ammonium citrate | 381 | |

Annex (3)

Enrichment Substances

| Substance | Fraction | |
|-----------------|-------------|------|
| Thiamine | 6.38 mg/kg | min. |
| Riboflavin | 3.96 mg/kg | min. |
| Niacin | 52.91 mg/kg | min. |
| Calcium content | 2115 mg/kg | max. |
| Iron | 30 mg/kg | min. |
| Folic acid | 1.5-2 mg/kg | min. |
| Vitamin D | 551.15 IU | min. |
| Wheat germ | 5 % | max. |

Annex (4)

Preservatives

| Substance | INS | Maximum limits |
|--------------------|-----|--|
| Calcium propionate | 282 | 0.32% singly or in combination calculated as propionic acid |
| Sodium propionate | 281 | |

Reference

- Gso 194/2006 “ wheat flour “
- Syrian standard No. 1902
- Egyptian standard 1667