


QUALITY PROTOCOL FOR FAST COOKING CORNMEAL
OR GRITS FOR PREPARING INSTANT POLENTA

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Resolution SAGPyA Nr: 302/2007

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA020	Version: 07	07.12.2007

INTRODUCTION

Cornmeal or grits are products obtained from milling peeled and degerminated pieces of *Zea Mays L.*

Fast cooking cornmeal or grits for preparing polenta are the same products described above. In this case the product particles have been treated to reduce their aggregation condition or size.

Hard red or Flint corn is the raw material used for this product. Hard red or Flint corn is grown only in a few places worldwide, and is native to the River Plate. Argentina has produced and exported the “Plata corn” since the end of the XIX century. This maize has been always highly valued. Its characteristics (color, hardness, etc) are very attractive for the business interest of local companies and of certain customers that require these products from abroad. The hard red corn kernel, Flint type, is transformed into an increasing variety of valuable products, like cornmeal or grits for polenta.

This type of product is obtained from the dry milling of kernels. Production involves physical processes for detaching, separating and grinding the different parts of the kernel: endosperm, germ and pericarp. Products obtained are: broken kernels, coarse grits, grits for expanded snacks, grits for beer, grits for polenta, cornmeal and zootechnical cornmeal.


Cornmeal and grits for polenta represent almost 50% of total national and international market demand for products derived from the dry milling of corn. They are followed by grits for beer, snacks grits and grits Nr 5. The rest is used for animal feeding in the form of zootechnical cornmeal.

Cornmeal or grits for preparing polenta are products recognized abroad and associated with Argentina. In addition, international market trends indicate an increasing demand for differentiated products, based on high quality raw materials and/or ingredients used in their production, together with information relative to their manufacturing process and geographical origin. These two facts stress the importance of generating the identification of the Argentine cornmeal as a differentiated product.

Scope

This protocol describes the quality attributes that fast cooking cornmeal or grits for preparing instant polenta must have to carry the “*Argentine Food – A Natural Choice*” Quality Seal.

Producers of fast cooking cornmeal or grits must take into account that compliance with current regulations on Good Manufacturing Practices, requirements for fast cooking cornmeal or grits and containers and labeling is implicit. These regulations are described in the Argentine Food Code – CAA (Chapter I “General provisions” – Resolution GMC Nr

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080/96 incorporated to the Code by Resolution MsyAS Nr 587/97; Chapter IX “Farinaceous Foods” – Cereals, Flours and Derivatives, Articles 694 and 694 bis; Chapter IV “Tools, Receptacles, Containers, Packaging, Equipment and Accessories”, and Chapter V “Food Labeling and Advertising Standards”; Resolution GMC 26/03 Technical Regulations for Nutrition Labeling of Packaged Food) and Resolution 7/2007 of the National Office for Agricultural and Commercial Control of the “Register of Grain Traders”.

Analytical tests must be carried out by authorized official laboratories using recognized official methods. This protocol indicates suggested methods, but their updated versions or equivalent techniques corresponding to national or international standards may also be used. Special attention is to be paid to sampling and sampling preparation methods previous to carrying out analytical testing of products.

For the purpose of this protocol, in addition to requirements included in the AFC, fast cooking cornmeal must comply with the additional differentiating attributes related to product, process, functionality of use and container described herein.

Product attributes

This protocol defines attributes related to raw materials to be used, physicochemical parameters, control of chemical contaminants and sensorial characteristics based on requirements described in the Argentine Food Code. As cornmeal is a differentiated quality product, various international regulations as the Codex Alimentarius, European Union (EU) Regulations and Guidelines, and Legislations of the European Union member countries and of other countries that produce and consume cornmeal have been taken into account.

Following are the criteria applied for selecting attributes:


- To establish product quality parameters related to quality of the raw material used.
- To establish product quality indicators related to the efficiency of the milling process.
- Ensure product preservation for consumption by establishing top levels of different compounds that may be found in grits.

Process attributes

This protocol includes requirements related to primary production to ensure raw material quality and the implementation of *Good Agricultural Practices* (GAP). In addition, companies must implement the Hazard Analysis and Critical Control Points (APPCC or HACCP) system in each stage of the manufacturing process.

Functionality of use attributes

Cooking time has been established as an attribute of this cornmeal, as it is important for consumers and characterizes the product together with other parameters as its granulometry.

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Container attributes

Complying with current regulations for containers in general, the criterion applied refers to containers preferred by consumers in destination markets. Multilayer polyethylene-polypropylene, polypropylene or polyethylene paper or bioriented polypropylene containers are accepted for the purposes of this protocol. Manufacturers are to determine the thickness of each layer in order to guarantee an adequate preservation of the product.

In addition, other innovative materials approved by a competent health authority will be considered and evaluated.

DIFFERENTIATING PRODUCT ATTRIBUTES

1. Commercial variety

Flint or Plata Corn according to Resolution SAGPyA Nr 757/97.

2. Physicochemical properties

Humidity: maximum 13.5% at 100-105°C (3 hours) according to the AFC.
Analytical method: AOAC 925.10

Granulometry: 95 % or more must pass through a sieve of 850 microns.
Not more than 5% must pass through a sieve of 250 microns of mesh size.
Analytical method: AOAC 965.22

Fat: maximum 1.3%.
Analytical method: AOAC 945.38F; 920.39C; 922.06.


Proteins: minimum 7 %.
It is suggested to select hard red or flint varieties that may ensure higher protein content.
Analytical method: AOAC 2001.11

Ashes: maximum 0.8 %.
Analytical method: AOAC 923.03

Black dots: maximum 5 in 100 cm².
Analytical method: Visual observation

Other cereal grain flours, foreign matters, insects: absence
Analytical method: Qualitative microscopy.

Strange tastes and smells: absence.
Analytical method: Sensory evaluation

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Color: orange.

Analytical method: Visual observation.

3. Chemical contaminants:

Mycotoxins

- Aflatoxin B₁: 5 µg/kg

- Total aflatoxins: 10 µg/kg

Analytical method: AOAC 968.22 and/or updated versions or equivalent.

- Ochratoxin A: 3 µg/kg

Analytical method: Guideline 2002/26/CE and Guideline 2005/5/CE.

- Fumonisin: 1000 µg/kg

Analytical method: Guideline 2005/38/CE.

- Zearalenone: 200 µg/kg

Analytical method: Official Method AOAC 968.22 and/or updated versions or equivalent.

- Deoxynivalenol (DON): 750 µg/kg

Analytical method: AOAC 986.17.


Heavy metals

- Lead (Pb): maximum 0.20 mg/kg.

- Cadmium (Cd): maximum 0.10 mg/kg.

Analytical method: Guideline 2001/22/CE.

NOTE: Companies must submit documentation informing periodicity of analysis and grounds for selecting their sampling methods. In all cases analyses must be carried out following recognized official techniques, at laboratories belonging to official networks.

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DIFFERENTIATING PROCESS ATTRIBUTES

Manufacturing companies aspiring to obtain the “Argentine Food, A Natural Choice” Seal must implement the Hazard Analysis and Critical Control Points System from reception of raw material to the final product to be sold.

Reception of raw material

An expert in cereals must control the commercial quality of raw materials. In addition, raw materials must be visually inspected and the manufacturer must count with a supplier development plan or ask the supplier to submit a quality protocol. Following are some points to be taken into account:

- To count with an updated list of suppliers with their corresponding data (for example: product type and quality – place of production – production volume – permanent or temporal supplier condition).
- To carry out periodical audits at the farms of primary producers in order to verify their compliance with Good Agricultural Practices (the processing plant must have records indicating audit date, number of audited producer and audit result).
- To analyze different suppliers at random throughout the year in order to determine the absence of contaminants and ensure the physicochemical and sanitary characteristics of products received at the plant. Periodicity of analyses and sampling method for the obtainment of raw material samples must be reported. These analyses may be carried out at company owned laboratories (in this case, the type and method of analysis must be reported) or in authorized official laboratories.


The main raw material must be stored in storage silos counting with temperature and humidity control and maintenance systems to ensure an adequate preservation of materials.

IMPORTANT Products covered by this protocol and by resolution SAGPyA Nr 392/05 must be separated from the rest, and batches and loads must be correctly identified to ensure that they are handled separately from the rest of products not protected by the Seal. For this purpose, the company must count with documentation and registers of the entire productive and commercial process corresponding to the products that carry the seal in their label.

FUNCTIONALITY OF USE ATTRIBUTES

Cooking time: maximum 3 minutes

Preparation instructions must be shown on packaging in a clear, visible and legible way.

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Labeling must comply with requirements established in Chapter V “Food labeling and advertising standards”.

DIFFERENTIATING CONTAINER ATTRIBUTES

Cornmeal or grits must be packed in containers suitable for safeguarding the hygienic, nutritional, technological and organoleptic qualities of this product.


Packaging materials must be bromatologically acceptable for the use they are destined to and must be approved by a competent health authority. They must not transmit any toxic substance or unpleasant odors or tastes to products.

Special attention must be paid to thermosealing or other container closures. Required information must be well printed and legible, including lot and batch identification data.

Containers must be multilayer and may be made of following materials:

- Polypropylene+polypropylene
- Polypropylene+polyethylene
- Bioriented Polypropylene
- Bi-layer flat background paper with polyethylene film.

Cardboard boxes must be used as secondary packaging to ensure the good condition of products throughout distribution.


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Elaboration of this protocol

This document has been prepared by the external auditor María Silvia Latreite, Eng., expert technician in the subject selected by the National Food Administration of the SAGPyA to develop this protocol.

In addition, the elaboration of this protocol counted with the cooperation of the following entities and companies related to the cereal sector:

- High Experimental Institute of Food Technology (ISETA) – Sensory Evaluation Department.
- National Institute of Industrial Technology (INTI Cereals and Oleaginous Crops).
- Empresa Rivara S.A.
- Dry Milling Chamber.

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Audit date:

Auditing company:

Audited company:

Location:

Head Office:

Town or city:


Telephone:

Name of the company's employee responsible for quality / position

Product: Fast cooking cornmeal or grits for preparing instant polenta

Reference protocol code: SAA020


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RESULTS


Attributes	Compliance		Observations
	YES	NO	
Product			
1. Commercial variety			
Hard Red Corn, Flint Corn or Plata Corn			
2. Physicochemical properties:			
Humidity: max. 13.5 to 100-105°C. (Method AOAC 925.10)			Verify register/s and record date and result of each analysis.
Granulometry: 95 % or more must pass through a sieve of 850 microns. Not more than 5% must pass through a sieve of 250 microns of mesh size. (Analytical method: AOAC 965.22)			Verify register/s and record date and result of each analysis.

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Attributes	Compliance		Observations
	YES	NO	
Fat: maximum 1.3% on dry substance. (Analytical method: AOAC 945.38F; 920.39C; 922.06)			Verify register/s and record date and result of each analysis.
Proteins: minimum 7 % on dry substance. (Analytical method: AOAC 2001.11)			Verify register/s and record date and result of each analysis
Ashes: maximum 0.8 % on dry substance. (Analytical method: AOAC 923.03)			Verify register/s and record date and result of each analysis
Black dots: maximum 5 in 100 cm ² (Analytical method: Visual observation)			Verify register/s and record date and result of each analysis
Other cereal grain flours, foreign matters, insects: absence (Method: qualitative microscopy).			Verify register/s and record date and result of each analysis
Strange tastes and smells: absence. (Analytical method: Sensory evaluation)			
Color: orange. (Analytical method: Visual observation).			Verify register/s and record date and result of each analysis


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Attributes	Compliance		Observations
	YES	NO	
3. Chemical contaminants:			
Mycotoxins¹			
Aflatoxin B ₁ : 5 µg/kg (Official method AOAC 968.22)			Verify register/s and record date and result of each analysis
Total Aflatoxins: 10 µg/kg (Official method AOAC 968.22)			Verify register/s and record date and result of each analysis
Ochratoxin A: 3 µg/kg (Analytical method: Guideline 2002/26/CE y Guideline 2005/5/CE.)			Verify register/s and record date and result of each analysis
Zearalenone: 200 µg/kg (Analytical method: Official Method AOAC 968.22 and/or its updated versions or equivalent)			Verify register/s and record date and result of each analysis


¹ At least 2 monthly analysis must be carried out for the control of mycotoxins, in own or external laboratories authorized for that purpose. It is required to have the results of 2 analyses as a minimum, carried out with a difference of more than 15 days.

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Attributes	Compliance		Observations
	YES	NO	
Deoxynivalenol (DON): 750 µg/kg (Analytical method: Official Method AOAC 986.17.)			Verify register/s and record date and result of each analysis
Fumonisin: 1000 µg/kg (Analytical method: Guideline 2005/38/CE)			Verify register/s and record date and result of each analysis
Heavy metals:			
Lead (Pb): maximum 0.20 mg/kg (Analytical method: Guideline 2001/22/CE).			Verify register/s and record date and result of each analysis
Cadmium (Cd): maximum 0.10 mg/kg (Analytical method: Guideline 2001/22/CE).			Verify register/s and record date and result of each analysis
Process			
1. Verify registers of SSOPs applied at the plant.			

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Attributes	Compliance		Observations
	YES	NO	
2. Verify registers of personnel training on Good Manufacturing Practices.			Record subject and date of last training.
3. Verify registers of the physicochemical and sanitary characteristics of the grain received at the plant.			Attach analyses carried out.
4. Temperature and humidity control and maintenance at the storage silo.			Verify registers and record result.
5. Verify registers of defined CCPs (Critical Control Points) monitoring.			Verify registers and record result.

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	YES	NO	
6. Verify registers of corrective actions.			
7. Verify registers of supplier control.			
Functionality of use			
Cooking time: maximum 3 minutes. Note: Accomplished based on granulometry.			Verify that preparation instructions are shown on packaging in a clear, visible and legible way.
Packaging			
a. Verify that multilayer packaging is used.			Specify packaging layers.


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Attributes	Compliance		Observations
	YES	NO	
b. Verify packaging approval certificates granted by competent health authority.			
c. Control of thermo or other packaging seals.			
d. Use of cartons as secondary packaging.			

Note 1: All analyses must be carried out by laboratories officially authorized for the above mentioned studies, using recognized official methods and calibrated equipment and instruments with their corresponding certificates.

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Conclusions

Audited company's employees interviewed:

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On behalf of auditing company

In agreement, on behalf of audited company

Signature, name and seal

Signature and name

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