



Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

## QUALITY PROTOCOL FOR COMMON TABLE SALT

Made official on: May 16, 2007

Resolution SAGPYA Nr 165/2007

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
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## **INTRODUCTION**

### **1. Scope**

This protocol defines and describes quality attributes required for table salts authorized to carry the “Argentine Food – A National Choice” Seal.

The objective of this document is to provide salt manufacturers in the Argentine Republic with an additional tool for obtaining differentiated quality products.

Being a dynamic document, this protocol may be periodically revised according to the needs of the public and/or the private sectors.

Producers aspiring to implement this protocol must take into account that compliance with current regulations regarding salt for domestic consumption is implicit. These regulations are described in the Argentine Food Code - AFC - Chapter XVI: Articles 1264 – 1266 – 1267- 1272 until paragraph “b” inclusive - 1273 - 1274 - 1275.

Salts modified in their mineral composition, as defined in articles 1379 and 1380, of Chapter XVII of the AFC (Dietary Food) are not covered by this protocol.


### **2. General criteria**

In order to be considered quality salt, enriched table salt must comply with requirements provided for in the AFC, and with additional differentiating attributes related to product, process and container described in this protocol.

These differentiated attributes for common table salts emerge from information provided by the company (Dos Anclas S.A. and Cía. Introdutora de Buenos Aires S.A.) that submitted this product’s first file in order to obtain the “*Argentine Food – A Natural Choice*” Seal, and from the legislation of Spain (Royal Decree 1424/1983), of Paraguay (Resolution S.G.Nr 344/99), of the Philippines (Act. N°8172/1995), of the United States (Regulation for food grade salt, 2004), and of Nicaragua (Draft for Salt Fortification), and from Codex Standard (CX STAN 150-1985).

Although in the foreign market each country has its own requirements, the different criteria have been unified in this protocol in order to cover those international demands that define the top quality of this product.

Requirements that have been compiled for this protocol correspond to following destination markets: United States, Uruguay, Paraguay, Perú, Venezuela and Korea.

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

### 3. Grounds for determining differential attributes

#### ***Product attributes***

These attributes are based on the requirements of the local market and of all the markets mentioned in point 2 (General criteria).

Physical and chemical attributes have been determined exceeding the requirements of the Argentine Food Code.

As consumers tend to prefer sustainable production methods that may cause a minimum initial contamination of raw materials, the only origin accepted for salt in this protocol are salt mines. In addition, the extraction of salt from salt mines contributes to the preservation of the product identity throughout the value chain.

#### ***Process attributes***

The process of salt extraction must be standardized as a result of consumer concerns and of the obligation of salt producers/manufacturers to preserve the environmental sustainability.

The purpose of stockpiling and ageing salt during the period of time stipulated in this protocol is to achieve natural washing and recrystallization through the action of rainwater.


The importance of the drying process in ensuring the elimination of halophyle bacteria must be remarked, as this contributes to define the process quality and to provide evidence on the origin of the raw material.

The implementation of the HACCP system has been included as differential attribute because this system is positively appreciated in purchasing markets as a guarantee of product harmlessness.

Transportation and storage characteristics are in agreement with the strictest requirements from local and international markets mentioned in point 2 (General criteria).

#### ***Container attributes***

Complying with current regulations for containers in general, those characteristics that ensure an optimal preservation of quality, facilitate the use of the product and allow a correct dosification of salt are considered differential attributes.

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

## **DIFFERENTIATING PRODUCT ATTRIBUTES**

### **1. Origin**

Table salt can only be obtained from salt mines, and those products derived from industrial recovery processes or from other origins will not be authorized to carry the "Argentine Food - A Natural Choice" Seal.

### **2. Physical and chemical properties**

It must be pointed out that all parameters defined are based on dry substance.

#### **2.1 Coarse grain salt**


- Humidity : maximum 0.15%
- Insoluble matters: maximum 0.08%
- Sulfates, as Calcium Sulfate on a dry basis: maximum 0.50%
- Total calcium, magnesium and potassium, calculated as the addition of their chlorides: maximum 0.25% on dry residue.

#### **2.2 Semi-fine salt:**

- Humidity: maximum 0.15%.
- Insoluble matters: maximum 0.10%.
- Sulfates, as Calcium Sulfate on a dry basis: maximum 0.50%.
- Total de calcium, magnesium and potassium, calculated as the addition of their chlorides: maximum 0.25%, on dry residue.

**2.3 Fine Salt:** Granulometry less than 420 microns and more than 125 microns, according to the AFC.

- Humidity: maximum 0.25%.
- Insoluble matters: maximum 0.10% (deducting the anticaking agent)
- Sulfates, as Calcium Sulfate on a dry basis: maximum 0.52%.

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

- Total calcium, magnesium and potassium calculated as the addition of their chlorides: maximum 0.25% on dry residue.
- Anticaking agents: those allowed by the AFC in amounts not exceeding 2.0%.

Anticaking agents may be replaced by up to 2% of starch.

#### **2.4 Extra-fine salt:** Granulometry less than 177 microns, according to the AFC.

- Humidity: maximum 0.25%.
- Insoluble matters: maximum 0.10% (deducting the anticaking agent).
- Sulfates, as Calcium Sulfate on a dry basis: maximum 0.52%.
- Total calcium, magnesium and potassium, calculated as the addition of their chlorides: maximum 0.55% on dry residue.
- Anticaking agents: those allowed by the AFC in amounts not exceeding 2.0%.

Anticaking agents may be replaced by up to 2% of starch.


#### Analytical methods

The reference methods for the above mentioned analyses are:

- Determination of humidity: ISO 2483:1973 Gravimetry (drying at 110°C)
- Determination of insoluble matters: AOAC 33.140 (1980).
- Determination of Sulfates, as Calcium sulfate on a dry basis: AOAC 33.143 (1980).

### **3. Chemical contaminants**

Heavy metals	Maximum Amount authorized Mg/k	Method
Copper	2	Heavy Metals Test. Food Chemicals Codex General Tests and Assoc. Fourth
Lead	2	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

Arsenic	0.5	and Assays. Fourth Edition 1996. Pages 760-762
Cadmium	0.1	
Mercury	0.1	

Analyses for the control of heavy metals must be carried out at least twice a year, in order to submit their results during the audits corresponding to the Seal.

## **DIFFERENTIATING PROCESS ATTRIBUTES**

### **1. Management Systems**

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 materials to final products to be sold.

### **2. Process**

#### **2.1. Extraction (Harvest)**

The extraction (harvest) method must be standardized in order to preserve the mother layer and ensure the sustainability of the natural resource by means of a controlled scraping of the surface as allowed by the natural deposit at the moment of extraction.

#### **2.2. Stockpiling and ageing**


Harvested salt must be stockpiled (outdoors) in heaps of approximately 200,000 tons and aged during a period of 18 to 24 months.

#### **2.3. Transportation from the heap to the plant**

Transportation from heap to plant entrance must be made by trucks with stainless steel cargo body. These trucks must be inspected before use to corroborate their adequate condition as regards hygiene.

#### **2.4. Washing**

Heap salt must be washed in counterflow with a brine solution. The 22°Bé concentration of the brine solution must be controlled daily. The physicochemical quality of salt must also be controlled daily following the methods described in point 2 of “Differentiating product attributes”.

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

Salt washing must be carried out with drinking water previously analyzed applying official methods.

Halophyle bacteria must be controlled by means of analyses carried out during processing to ensure salt quality. Once the aging period has been completed, analyses may be carried out by total plate count and at every heap opening, using the following culture media:

- Halophyle bacteria: Absence in 1 gr. TSA (Tryptose-Soy-Agar) at 40% NaCl during 25 days at 37°C.

## 2.5. Drying, classification and grinding

After the washing process, salt must be centrifuged and carried to a fluid bed dryer to submit it to a temperature of 120°C during 10 minutes. This process ensures the elimination of bacteria, fungi and yeasts.

Equipment and ducts of the drying, classification and grinding system must be of stainless steel AISI 316/304.

## 2.6. Enrichment

Salt enrichment with a solution of Potassium Iodate is recommended to guarantee homogeneity in the distribution of Potassium Iodate. This ensures stability and consequently bioavailability of iodine.


Technique justification: salt will be subjected to an enrichment process with solution of potassium iodate, using a liquid phase dosifying system. This does not affect the previous drying, as the initial humidity content of salt is lower than the pre-established one. The process is carried out under an exhaustive and documented control of the dispensed solution volume according to the amount of dry salt that enters the enrichment process in a continuous way.

The amount of salt and the solution volume dispensed per mass unit of incoming salt will be controlled by means of load cells and volumeters calibrated by a competent authority.

## 2.7. Storage and transportation

Salt must not be exposed to rain, excess humidity or direct sunlight in any of the storage, transportation or sale phases.


Moreover, it must be stored only in roofed buildings or warehouses, sufficiently ventilated and destined exclusively for this purpose.

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretariat of Agricultural Policy and Food National Food Administration	QUALITY PROTOCOL	
Code: SAA014	Version: 09	03.27.07

### **DIFFERENTIATING CONTAINER ATTRIBUTES AND FUNCTIONALITY OF USE**

According to criteria stated in point 3 of the introduction to this protocol, containers to be used for salts authorized to carry the Seal must be air tight, rigid or flexible or made of high density polyethylene (HDOE) or of polypropylene (PP) (laminated or not). Salt shakers or cartons with aluminum pouring spout are also accepted.



Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	AUDITOR'S APPROVAL	
Code: SAA115	Version: 02	03.27.2007

**Audit date:**

**Auditing company:**

**Audited company:**

Location:

Head Office:

Town or City:

Telephone:


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

**Product: Common Table Salt**

**Reference protocol code: SAA014**


<u>Attributes</u>	<u>Compliance</u>		<u>Observations</u>
	<u>ES</u>	<u>Q</u>	

		Page 9
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007


<b>Product</b>			
<b>1. Origin:</b> raw material must come from salt mines exclusively.			
<b>2. Physical and chemical properties:</b>			
<b>a. Coarse grain salt</b>  -Humidity : maximum 0.15% (Method ISO 2483:1973 Gravimetry, drying at 110°C)  -Insoluble matters: maximum 0.08%. (Method A.O.A.C. 33.140, 1980)  -Sulfates, as Calcium sulfate on a dry basis: maximum 0.50%. (Method A.O.A.C. 33.143, 1980)  -Total Ca <sup>+2</sup> , Mg <sup>+2</sup> and K <sup>+</sup> , calculated as the addition of their chlorides: maximum 0.25%, on dry residue.			Verify register/s and record date and result of each analysis.
<b>b. Semi-fine Salt:</b>  -Humidity: max. 0.15%			Verify register/s and record date and result of each analysis.

		Page 10
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007


(Method ISO 2483::1973 Gravimetry, drying at 110°C)  -Insoluble matters: max. 0.10% (Method A.O.A.C. 33.140, 1980)  -Sulfates as calcium sulfate on a dry basis: max. 0.50% (Method A.O.A.C. 33.143, 1980)  -Total Ca <sup>+2</sup> , Mg <sup>+2</sup> and K <sup>+</sup> , calculated as the addition of their chlorides: max 0.25%, on dry residue.			
<b>c. Fine Salt:</b>  -Humidity: max. 0.25% (Method ISO 2483:1973 Gravimetry, drying at 110°C)  -Insoluble matters: max. 0.10% (deducting anticaking agent) (Method A.O.A.C. 33.140, 1980)  -Sulfates as calcium sulfate on a dry basis: max. 0.52% (Method A.O.A.C. 33.143, 1980)  -Total Ca <sup>+2</sup> , Mg <sup>+2</sup> and K <sup>+</sup> , calculated as the addition of their chlorides: max 0.25%, on dry residue.			Verify register/s and record date and result of each analysis

		Page 11
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007

<p><b>d. Extra Fine Salt:</b></p> <ul style="list-style-type: none"> <li>- Humidity: max. 0.25% (Method ISO 2483:1973 Gravimetry, drying at 110°C)</li> <li>- Insoluble matters: max. 0.10% (deducting anticaking agent) (Method A.O.A.C. 33.140, 1980)</li> <li>- Sulfates as calcium sulfate on a dry basis: max. 0.52% (Method A.O.A.C. 33.143, 1980)</li> <li>- Total Ca<sup>+2</sup>, Mg<sup>+2</sup> and K<sup>+</sup>, calculated as the addition of their chlorides: max 0.55%, on dry residue.</li> </ul>			Verify register/s and record date and result of each analysis.
<p><b>e. Anticaking agent:</b> calcium silicate, magnesium silicate, Sodium silico aluminate, tricalcium phosphate, magnesium carbonate, individually or in mixtures, in amounts not exceeding 2.0%. They may be replaced by up to 2% of starch. (Only for Fine and/or Extra Fine Salt)</p>			Verify register/s and formula.


		Page 12
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007

<b>3. Chemical contaminants<sup>1</sup></b> Method: Heavy Metals Test. Food Chemicals Codex General Tests and Assays. Fourth Edition 1996. Pages 760-762			
a. Copper: max. 2 Mg/k			Verify register/s and record date and result of each analysis.
b. Lead: max. 2 Mg/k			Verify register/s and record date and result of each analysis.
c. Arsenic: max. 0.5 Mg/k			Verify register/s and record date and result of each analysis.
d. Cadmium: max. 0.1 Mg/k			Verify register/s and record date and result of each analysis.
<b>Processing</b>			
<b>1.Management System: HACCP Plan</b> a. Verify monitoring registers of defined critical control points (CCP).			

<sup>1</sup> Analyses for control of heavy metals must be carried out at least twice a year, corresponding to the audits required for the Seal.


		Page 13
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007

<b>b.</b> Verify registers of transportation hygiene and maintenance, from the heap to the plant.			
<b>2. Manufacturing</b>			
<b>a. Stockpiling:</b> Verify registers indicating the weight of heaps as well as the aging time that must be 18 to 24 months.			Verify register/s and record date.
<b>b. Washing:</b> - Daily control of the 22° Bé concentration of the brine solution, and monitoring of the physicochemical quality.  - Verify use of drinking water.			Verify register/s and record date and result of each analysis.  Verify water analyses and their periodicity.
<b>d. Microbiological Control:<sup>2</sup></b>  - Halophyle organisms: Absence in 1 gr. (TSA at 40% NaCl during 25 days at 37°C)			Verify register/s and record date and result of each analysis.
<b>e. Drying, classification and grinding:</b> Equipment and ducts of the stainless steel system AISI 316/304.			

<sup>2</sup> It is carried out after aging has been completed.


		Page 14
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007

<b>Packaging</b>			
Verify compliance with conditions defined in the protocol.			Specify type of container

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.

		Page 15
Auditor's Signature	Name	

Secretariat of Agriculture, Livestock, Fishing and Food Undersecretary of Agricultural Policy and Food National Food Administration	<b>AUDITOR'S APPROVAL</b>	
Code: SAA115	Version: 02	03.27.2007

**Conclusions**

Audited company's employees interviewed: -----  
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\_\_\_\_\_  
On behalf of the auditing company

\_\_\_\_\_  
In agreement, on behalf of the audited company

Signature, name and seal

Signature and name

		Page 16
Auditor's Signature	Name	