

Protected spirit name

Product specification for Miske

Competent Authority

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Applicant

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1. Name to be registered

Miske

2. Category or categories of the spirit drink

Other spirit drinks' category of Annex II to Regulation (EC) No 110/2008

3. Description of the characteristics of the spirit drink

Miske is the Ecuadorian alcoholic beverage, which must be obtained by the distillation of fermented tzawarmishky, whose sugars are 100% from ripe tzawar and conditions given by the DOPM. The transformation of sugars to alcohols is carried out exclusively with microorganisms native of the zone, whether this process is spontaneous or cultivated by microorganisms.

3.1 Physical, chemical and/or organoleptic characteristics

Sensory specifications:

Visual phase

Transparent, clean with no residue. Bright clear with silvery hues, medium tears.

In those matured in noble wood, its dark amber color, which shows its aging in wood. Full-bodied, thick, and silky. It forms a precise waist and very marked legs.

Olfactory phase

Notes of ripe fruit and tzawar, grass or green grass, white and violet flowers, slight vegetal and citrus notes, wood, smoke.

Delicate sweet tzawar, citrus and herbal notes, honeyed profile with botanical nuances, cooked tzawar notes sprout, tender fig, with hints of ripe orange peel, anise, menthol and eucalyptus, almonds, olives, myrtle, vanilla notes, chamomile flower and honey, with a long peppery finish.

Taste phase

Persistent ripe fruit, twazar and herbal, with the presence of white and violet flowers, brief vegetal and citrus notes, low lactic presence, smoked cooked tzawar.

Mellow and botanical impact with aniseed character, silky on the palate, medium warming and slight astringency, easy to drink predominate notes of green agave, candied fig, prune, vanilla, orange peel nuances appear, prickly pear, earth and accompanied by notes of nuts, almonds with traces of pepper and cloves, the finish is fresh and liquor, creamy and smooth on the palate.

It has a slightly spicy flavor, notes of mineral salt, a touch of acidity from the citrus aromas that allow salivation, it is a little bitter in the aftertaste.

Distillate with light fruity, herbal, and floral notes with pleasant warming, medium bodied, silky on the palate.

Chemical Specifications for Miske

Miske for human consumption must comply the following physical-chemical specifications (see Table):

Board3. Physicochemical specifications for the Miske

Requirements	Unit	Minimum	Maximum	Testing method
Alcohol Content (20°C)	%Alc. Vol.	35	55	NTE INEN 340
Furfural	mg/100 ml (*)	-	10	NTE INEN 2014
Methanol	mg/100 ml (*)	-	25	NTE INEN 2014

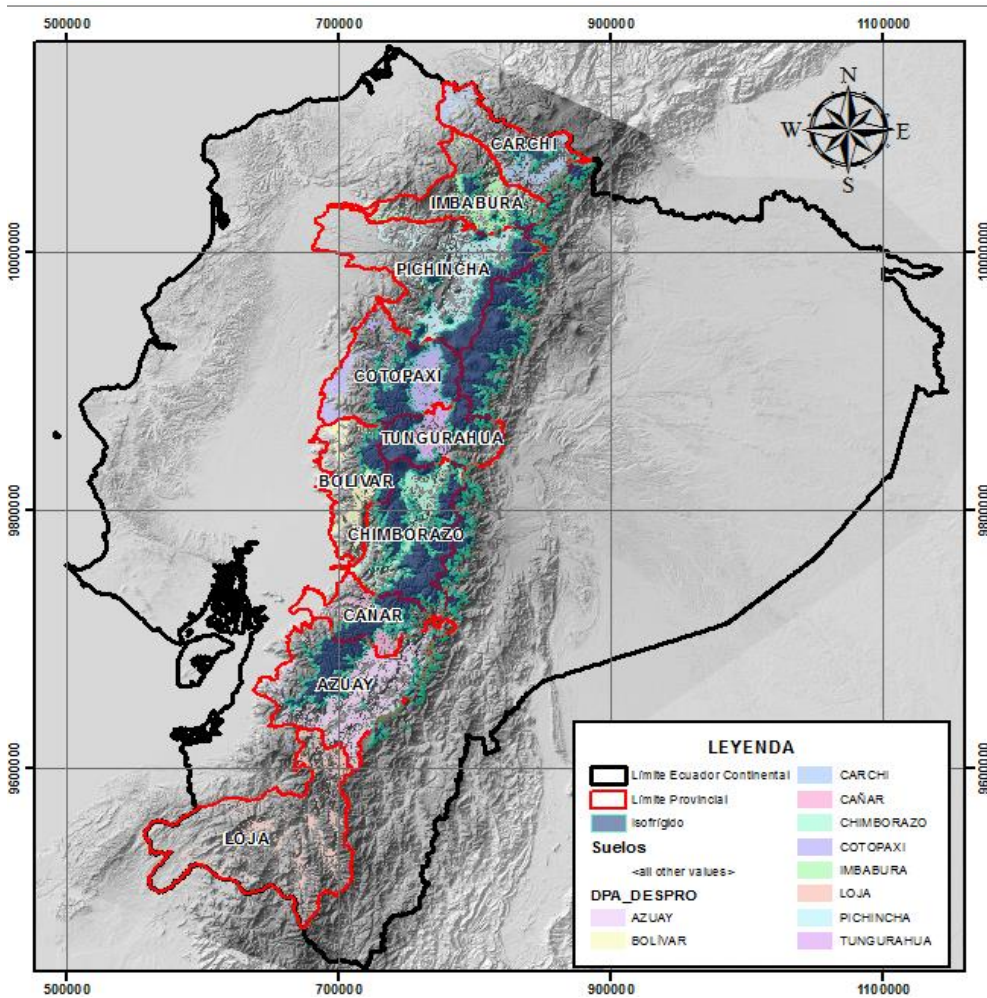
Higher alcohols **	mg/100 ml (*)	-	1000	COVENANT 3045 NTE INEN 2014
Sugars	g/L	-	50	NTE INEN 358
Esters	mg/100 ml (*)		80	NTE INEN 2014
Aldehydes	mg/100 ml (*)		20	NTE INEN 2014
Dry extract	mg/100 ml (*)		400	NTE INEN 2014
<p>* The volume of 100 ml corresponds to absolute alcohol ** Higher alcohols include: isopropanol, propanol, isobutanol, isoamyl, amyl. * Products covered in the classification</p>				

4. Definition of the geographical area

The production area protected by the "MISKE" Denomination is made up of the following cantons, located in the provinces of:

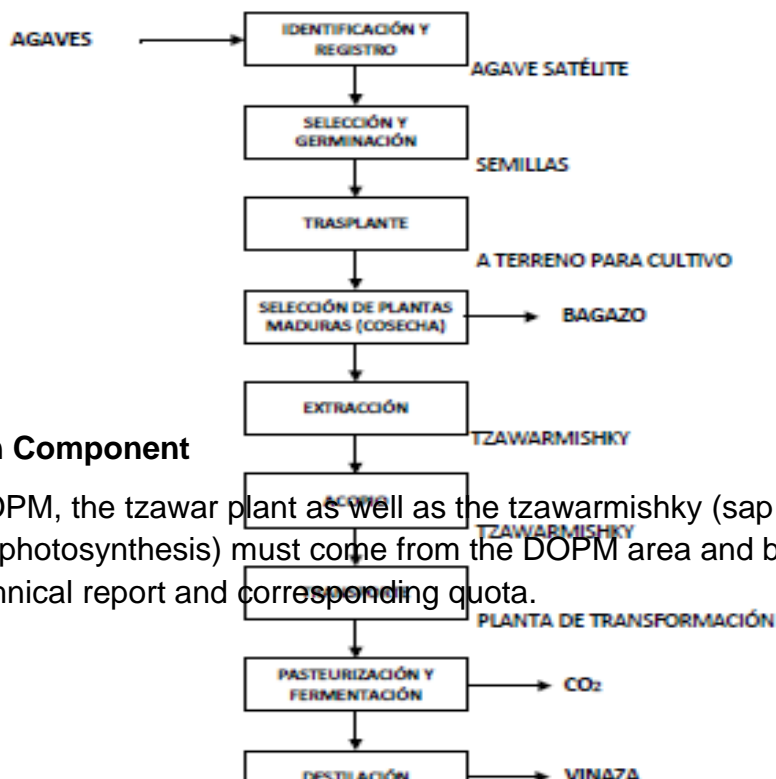
PROVINCE	CANTON
CARCHI	BOLÍVAR, MIRA, MIRROR, MONTUFAR
IMBABURA	ANTONIO ANTE, OTAVALO, IBARRA, URCUQUI, COTACACHI, PIMAMPIRO
PICHINCHA	CAYAMBE, MACHACHI, PEDRO MONCAYO, RUMIÑAHUI, QUITO
COTOPAXI	LATACUNGA, PUJILI, SAQUISILI, SALCEDO, SIGCHOS
CHIMBORAZO	RIOBAMBA, PENIPE, GUANO, CHAMBO, COLTA, CAJABAMBA, GUAMOTE, ALUASI, CHUNCHI
TUNGURAHUA	AMBATO, PELILEO, CEVALLOS, QUERO
BOLIVAR	GUARANDA, SAN MIGUEL, CHIMBO, CHILLANES
CAÑAR	CAÑAR, BIBLIAN, AZOGUES, SUSCAL, DELEG, TAMBO
AZUAY	CUENCA, SEVILLA DE ORO, PAUTE, GUACHAPALA, EL PAN, GUALACEO, CHORDOLEG, SIGSIG, NABÓN, GIRON, OÑA, SAN FERNANDO, SANTA ISABEL, PUCARA
LOJA	LOJA, SARAGURO, CATAMAYO

The tzawar plantations in the protected geographic area are established between a minimum elevation of 1,600 m and a maximum elevation of 3,300 m above sea level.



5. Production method

Flowchart of the Miske process.



Extraction Component

For the DOPM, the tzawar plant as well as the tzawarmishky (sap or photosynthetic product of photosynthesis) must come from the DOPM area and be authorized by OCAM after a technical report and corresponding quota.

Production will begin on March 21 and end on December 21 of the current year.

The methods of extracting the jimado and crushing the pineapple to extract the sap, which are considered non-traditional methods, are prohibited.

The Tzawar will have the following considerations for its use:

Chart 3. Origin of tzawar for extraction of tzawarmishky

ORIGIN OF TZAWAR (cultivation)	★	★★	★★★	★★★★	★★★★★
Andean chakra (min)	25%	40%	55%	70%	80%

Chart 4. Geographic origin of the tzawar

ORIGIN OF TZAWAR	★	★★	★★★	★★★★	★★★★★
<i>Geographical</i>	Regional	Zonal	Provincial	Cantonal	Parochial

Physical characteristics and management of the tzawar for the tzawarmishky extraction

Tzawar Maturity

It is the set of morphological and phenological characteristics of each plant that determines the right time to make use of it. A tzawar should only be used when the beginning of flowering is identified (from 7 to 15 years), change of coloration of the bud stalks, widening of the base of the tzawar, as well as low saponin levels, pH 6- 7, sugar levels of approximately to 10 °Bx extracted with a punch from the inner part of the tongon.

Cap or capping of the tzawar

It is a practice at the discretion of the master (a) Mishkero (a) whose cut can be lateral cut (on the third leaf) or apical cut (at the base of the bud, tzawarquero or floral apex), to prevent flowering taking place. The tzawar after being "capped" should wait a minimum of 3 months and a maximum of 1 year to reach conditions which are favorable to proceed with the chopping and scraping of the tzawar.

Chopping and scraping the tzawar

It should be done manually until reaching the polongo and make the hole or bowl of the tzawar to a diameter suitable for the extraction of the tzawarmishky and according to the size of the plant. The aspina chikchina or churo should be used to perform the scraping. The bowl can be left to rest with water and bagasse until the tzawarmishky is secreted.

According to the knowledge and practices of each zone, the use of water at this stage is optional.

Physical characteristics and handling of the sap or tzawarmishky

Chart 5. Collection in liters and its origin of tzawarmishky given by DOPM

COLLECTION OF TZAWAR MISHKY	★	★★	★★★	★★★★	★★★★★
Number of liters per person per year	+100hl	100hl	80 hl	40 hl	20 hl

Chart 6. Geographical collection of the tzawar

COLLECTION OF TZAWAR MISHKY	★	★★	★★★	★★★★	★★★★★
Geographic origin	Regional	Zonal	Provincial	cantonal	Parochial

Proper management of the tzawar

Proper handling of the tzawar, which includes activities before, during and after the extraction process, is essential to guarantee the purity of the tzawarmishky and thus the quality of the Miske.

Chart 7. Proper management of the tzawar

PROPER HANDLING OF TZAWAR	★	★★	★★★	★★★★	★★★★★
tzawarmishky (max)	5 %	10%	20%	30%	40%

★ Lowly recommended★★★★★ Highly recommended

a) TRANSFORMATION COMPONENT

Reception: The reception will be the one that will determine the initial conditions of the tzawarmishky for the elaboration of the "Miske" whose harvesting and collection would start from March 25 and ends on December 21 of the current year. The processes and equipment used in the handling of the tzawarmishky will guarantee the quality and the place of origin of the "Miske".

Cooking: The artisanal cooking of tzawarmishky is to transform the raw polysaccharides of the tzawar to a monosaccharide concentrate suitable for fermentation to take place and eliminate pathogenic microorganisms, preserving the appropriate characteristics of the sap for the start of fermentation.

Fast cooling: The process to prevent the growth of undesirable microorganisms within the tzawarmishky, creating the proper conditions for yeast growth and optimal fermentation.

Fermentatio: The process by which it allows native microorganisms to convert 100% cooked tzawarmishky sugars into alcohols and other complex aldehydes in a fermented drink also called guarango.

Table 1. Parameters and efficient conversion from tzawarmishky to guarango

Parameters	Start	End
°Bx or equivalent	Greater than 10	0 - 3
pH	Greater than 4.5	Less than 3.5
Alc. Vol. % 20 °C	0	12
Capacity	10 hl	10 hl

Chart 8. Sugar transformation yield

TRANSFORMATION	★	★★	★★★	★★★★	★★★★★
Conversion sugar-alcohol (min)	30%	40%	50%	65%	80%

Notes:

- b) The efficient use of the monosaccharides of the tzawarmishky promotes a friendly development with the environment.
- c) The percentage of conversion of monosaccharides to alcohol is calculated: Brix degrees or its initial equivalent with respect to the final measurement.

$$\% CM = 100 - \frac{(100 * \text{°Brix}_f)}{\text{°Brix}_0}$$

Where:

%CM = Is the percentage of conversion of monosaccharides to alcohol.

Brix_f = Is the final sugar concentration found in the mixture after fermentation.

Brix₀ = Is the initial sugar concentration found in the mixture before fermentation.

Distillation, handling, characteristics, and classification

Distillation period

Drinks obtained from the distillation of 100% tzawar guarango are entitled to the protected designation of origin “Miske”. Distillation must be completed no later than March 21 of the year following the harvest of the previous year's Miske batches.

Classification of the Miske

By distillation number (TYPE)

1st Distillation (Yanga), cannot be released for human consumption because it contains a greater quantity of higher alcohols, impurities, undesirable physical and sensory characteristics, it is for exclusive use as raw material (bulk).

2nd Distillation (kurak), equal or higher than 35% Vol. Alc. To be released for human consumption, the corresponding dilution must be made to obtain the permitted degree of between minimum 35% Vol. Alc. and maximum 55% Vol. Alc.

3rd Distillation (Aya), higher or equal to 80% Vol. Alc. To be released for human consumption, the corresponding dilution must be made to obtain the permitted degree of between minimum 35% Vol. Alc. and maximum 55% Vol. Alc.

a) Description of distillation materials.

The still or distiller is made of suitable materials such as clay, copper, stainless steel, and a combination of these is permitted. The total capacity of the mash kettle must not exceed 10 hectoliters (with a tolerance of 5%) and the volume of the charge is limited to 75% of the total capacity.

The materials of which the distiller is composed must be free of traces of heavy metals (lead, cadmium).

Chart 9. Miske Production Efficiency

TRANSFORMATION	★	★★	★★★	★★★★	★★★★★
Consumption in liters of water per liter of Miske produced	Max twenty	≤12	≤10	≤8	≤6

Chart 10. Percentage transformation of the sap

TRANSFORMATION	★	★★	★★★	★★★★	★★★★★

Usage in liter sap/alcohol at 40% vol. Alc.	≤4%	6%	8%	10%	+10%
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By maturation (CATEGORY)

Tabla 2. Classification by maturation

lullu	Musu	Yuyak	khatun
1 year to 3 years	3 years 1 day to 6 years	6 years 1 day to 12 years	+ 12 years

The batches of tzawarmishky extracted up to December 21 of the year harvest and distilled up to March 21 of the following year are considered year 0 and the annual count by maturation every March 21.

a) Description of maturation materials

The maturation of the "Miske", will be carried out without interruption exclusively in earthenware containers (certified free of heavy metals), noble wood, glass or stainless steel in a contact surface of 600 liters of maximum capacity and in a space with minimum variations of luminosity (550 to 590 nm), temperature (maximum 20 °C) and humidity (60% to 70%). To be released for direct human consumption, at least the first year of maturation will take place in the geographical area of the DOPM.

The materials used for maturation must be certified to be free of heavy metals (lead, cadmium).

The addition of pieces of wood from the tzawar that is part of the authorized traditional methods will be allowed.

The weighted average of years which is the sum of all the years of the participating mikes divided by the number of mikes but taking into account the percentage of participation of each one referring to the same alcoholic graduation, will be the authorized method for determining the maturation of the mix of mikes.

$$VT = \frac{V1 * C1}{Cref} + \frac{V2 * C2}{Cref} + \dots n = VP1 + VP2 + \dots n$$

$V1 = Volume\ 1$

$VT = Volume\ Total$

$C1$ = Concentration Alcoholic C_{ref} = Concentration Referential Alc.

$E1$ = AGE IN YEARS \overline{EP} = WEIGHTED AVERAGE AGE IN YEARS

Chart 11. Characterization of the Miske.

DISTILLATION	★	★★	★★★	★★★★	★★★★★
Maturation Years	< 1 year	1 year to 3 years	3 years 1 day to 6 years	6 years 1 day to 12 years	+ 12 years

Chart 12. Water added

DISTILLATION	★	★★	★★★	★★★★	★★★★★
Water added to the Miske (Max)	20%	15%	10%	5 %	0%

Chart 13. Geographical origin of the Miske

DISTILLATION	★	★★	★★★	★★★★	★★★★★
Origin	Regional	Zonal	Provincial	cantonal	Parochial

Additional tasks

Assembly will be carried out hot in the 2nd distillation with the first distillate.

Distilled with... in the 2nd distillation and only with natural substances.

Added with... in the maturation of the Miske, not more than 1% of the volume and only with natural substances.

Added with... of hardwood pieces in the maturation is part of the authorized traditional methods, not subject to maturation category.

Food and beverages may refer to the DOPM indicating on the main label "Product made with Miske", clearly indicating the content expressed as a percentage of the total weight of the ingredients at the time of preparation and in accordance with the Miske regulations.

6. Description of the link between the spirit drink and its geographical origin

The tzawar plantations in the protected geographical area are established between a minimum elevation of 1,600 m and a maximum of 3,300 m above the sea level, due to the fact that in these areas there are: flowering cangahuas, arid soils, average rainfall of 180 mm that coincide with the soil and climate conditions for the adequate growth of the tzawar.

In which the plant has grown in wild and semi-domesticated form next to which are the zones of production, bio-knowledge, native towns among others.

In the components of the Miske production chain, the human factor plays an important role, so that in each component the quality of product is generated.

Propagation Component

Quality to select the best plant or seed according to characteristics.

For the Protected Designation of Origin "Miske" the tzawar (*Andean Equatorial Agave americana* spp.) will be propagated in the following ways of reproductions:

Kind of tzawar- The Agavaceae family has species in almost all environments, vegetation types and altitudes distributed from the southern common names: penco, tzawar (kichwa), chuchao (quechua) chaguar (Spanish), tawka (aymara), pita, maguey, cabuyo, sanca, fique. In Ecuador, the tzawar are located in the inter-Andean alley from 1600 m to 3300 m above sea level, and at least 7 subspecies for their uses, practices and knowledge (yana, yurak, jary, warmi, ishtado, gasca, guayco) belonging to the next classification:

Kingdom:	Plantae
Division:	Magnoliophyta
Class:	Liliopsida
Subclass:	Liliidae
Order:	Asparagales
Family:	Asparagaceae
Subfamily:	agavoideae
Gender:	Agave
Species:	A. American

Propagation by seeds- Germination of seeds that come from sexual reproduction of elite, healthy and vigorous tzawar plants whose characteristics conserve the genetic fidelity of the species in the geographical area of extraction.

Conditions:

- a) Origin: Wild, Andean Chakra, forest agave in the DOPM prior authorization and registration.
- b) Propagation: Certified nurseries authorized by OCAM and relevant entity.
- c) Quantity: Unlimited
- d) Destination: The different cultivation systems contemplated in the PDO and its geographical area.

Propagation by tillers- The tillers come from the asexual or vegetative reproduction of the tzawar and conserve the characteristics of the mother plants.

Conditions:

- a) Origin: Wild, Andean Chakra, forest agave in the DOPM area prior authorization and registration.
- b) Propagation: Certified nurseries and cultivation with authorization of use.
- c) Quantity: Limited, the amount of offspring extraction will be authorized annually according to a technical report and agroecological process of extraction, this will have a limit of 60% of the entire productive unit in order to conserve its existence and sustainable use; applies to all cultivation systems.
- d) Destination: Different cultivation systems contemplated in the DOPM.

Micro propagation- Techniques and methods of tissue culture for asexual reproduction using parts of the tzawar such as leaves, stem and root. The tzawar must have a registration and source descriptor.

Conditions:

- a) Origin: In the area of the DOPM prior technical report and authorization.
- b) Propagation: Nurseries and authorized research lots.
- c) Quantity: Maximum 5% of the entire production unit and authorized according to a technical and favorable report issued by OCAM, being its purpose research and conservation of endangered twazar variants and conservation of genetic material.
- d) Destination: Authorized lots

Table 1. Proportion of Agave Americana spp Andean Equatorial plants given by DOPM

SPREAD	★	★★	★★★	★★★★	★★★★★
by seeds	35%	fifty %	60%	75%	85%

(min)					
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★Lowly recommended, ★★★★★Highly recommended

- Each level (represented by stars) must add 100% of the component between the 3 or 2 forms of propagation according to the amounts allowed. (See numerals 1.2.1 and 1.3.1).

- a) The propagation components in reason of promoting sustainable management of the tzawar will be considered different proportions and verified annually.
- b) Sexual propagation is the one with the greater conservation and genetic variety, reason why it is highly recommended.

Cultivation Component

The lands of the arid zones of the Ecuadorian Sierra, both in the Inter-Andean Valley, and on the western slopes, are especially favorable to the development of agave cultivation. The harsh climatic conditions, the lack of irrigation, but the existence of very eroded surfaces, and the agricultural culture of the rural populations are a formidable base for the industry of cabuya, fique or sisal and the Miske industry.

Crop Component

For the DOPM, the monoculture production system and the tzawar planted as new crops will be carried out and classified in the following cultivation systems:

Andean Chakra is an ancestral and integral polyculture and associated with the agroecological practices typical of the Ecuadorian inter-Andean corridor which are cultivated.

Forest agave, system that, according to the characteristics of the property and the availability of resources, is associated or not to the cultivation of agaves with forest species.

Wild Systems are native tzawar of Ecuador distributed in the inter-Andean alley in a natural way and without the intervention of the farmer, whose specimens in free life are found forming part of the characteristic landscapes of the equatorial inter-Andean corridor.

Its use is 25%, for research, conservation, characterization and for family consumption.

Table 2. Proportion of plants in cultivation of Agave Americana spp Andean Equatorial given by DOPM

CROP	★	★★	★★★	★★★★	★★★★★
andean chakra	15 %	30%	50%	70%	100%
(min)					

★Lowly recommended, ★★★★★Highly recommended

Socioeconomic and Environmental impact of productive activity

The activities and natural resources of each one of the components of the productive chain have an impact on the quality of the Miske, sustainability and durability of the denomination of origin.

Chart 14. Environmental socioeconomic impact matrix

FACTOR	SUBFACTOR	ENVIRONMENTAL FACTOR	SPREAD	CROP	EXTRACTION	TRANSFORMATION	COMMERCIALIZATION
ABIOTIC	Physical	soil quality					
		air quality					
		water quality					
		sound quality					
		Landscape / Visual impact					
BIOTIC	Flora	Vegetation cover					
		Protected species					
	Fauna	Protected species					
	Ecosystem	sensitive ecosystems					
SOCIO-ECONOMIC AND CULTURAL	Socioeconomic	Quality of life and well-being					
		Citizen perception					
		Employment					
		fair trade					
	Cultural	Cultural heritage					
		Archaeological Heritage					

Notes:

- a) The socioeconomic environmental impact matrix will evaluate each component separately, placing a positive sign (+) indicating compliance, or a negative sign (-) indicating non-compliance.
- b) The assignment of stars will be the result of the sum of positive signs divided by 3.

7. Labelling and packaging

The finished product must be packaged manually or mechanically and must comply with at least 5 stages and be authorized by OCAM.

- a) Bottle washing should be carried out with disinfecting agents and must be gauged with miske and/or quality water for human consumption.
- b) Filtration of the finished product must use filter(s) to capture solids.
- c) Filling
- d) Capping, and
- e) Sealing.

Considerations

- The packaging must be carried out in accordance with the corresponding and current INEN standard in force.
- More than two miske of a different category or type can be bottled as long as they have their respective registrations.
- Recycled bottles cannot be used, the material of the bottles must be approved by the OCAM and the regulatory entity of Ecuador.
- The 1st distillate that complies with TABLE 3, may be bottled only in bulk for commercialization as raw material, as long as it has not received an alcoholic strength adjustment, in which case it must be subject to a second analysis only of % Alc. Vol., in terms of the specifications of TABLE 3 (see, Table 3).
- The packaging must be carried out exclusively in the geographical area of the controlled designation of origin of the Miske. Miske will be referred to as "bottled in origin" if it belongs to the same Provincial jurisdiction and outside of this it will be referred to as "bottled in Ecuador".
- When the bottler carries out the packaging of other products other than Miske; it must have in its facilities differentiated bottling lines, previously authorized by OCAM, ensuring that the Miske does not come into contact with lines, containers or infrastructure that could be used for the process, transport or containment of another beverage or alcoholic product.

- For the category of maturation for more than 3 years, added with and distilled with, addition of..., prior to bottling, a second analysis must be performed out to demonstrate compliance with all the established parameters.

8. Inspection Body

Name: Office of Control and Administration of the DOPM

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