Ref. Ares(2024)7360752 - 16/10/2024

PRODUCT SPECIFICATION

1.1. Name

'Erzincan Tulum Peyniri'

1.2. Description of the agricultural product or foodstuff

‘Erzincan Tulum Peyniri’ is a white to cream in colour, whole-fat, semi-hard homogenous cheese produced from at least 95% raw milk of Akkaraman sheep or a mix of milk from that animal with Morkaraman sheep or goat’s milk, with a maximum of 5% of the latter, produced between the fourth and ninth month of the year, matured in the sheep or goat’s skin bag or plastic drums. ‘Erzincan Tulum Peyniri’ has a granular structure, crumbles in the mouth and has a distinctive flavour arising from compounds from feed, lipolysis and oxidation products, giving it an acidic taste that bites the tongue.



Şekil 2. 'Erzincan Tulum Peyniri'. a) in skin bag, b) in plastic drum.

'Erzincan Tulum Peyniri' must be matured for at least four months. 1 kg of 'Erzincan Tulum Peyniri' is obtained from 4-5 liters of milk. The distinctive features of 'Erzincan Tulum Peyniri' ensure that it is produced using at least 95% sheep's milk, traditionally produced rennet from lamb or calf and spring salt, and tightly pressed on packaging material suitable for food grade

or goat and sheep skin bag. Some of chemical composition of 'Erzincan Tulum Peyniri' are given below.

Table 1. Composition of 'Erzincan Tulum Peyniri'.

Composition	Amount (%)
Total solids	Minimum 55
Moisture	Maximum 45
Fat in drymatter	Minimum 45
Salt in dry matter (m/m)	Maximum 5
Titratable acidity as lactic acid	Maximum 2
pH	4,7-5,4

Sensory properties

'Erzincan Tulum Peyniri' is primarily white but sometimes has a creamy color due to the feeding regime. It has a homogenous structure that crumbles easily when squeezed between two fingers. In the mouth, it has a creamy structure that disperses quickly.

The taste of 'Erzincan Tulum Peyniri' stems from the animal's feeding regime, the milk's native enzymes, and the microbial activity during cheese maturation. Aromatic terpenes (α/β-pinene, 3,7-dimethyl-1,6-octadiene, o/p/m-chymen, 2/3-carene, limonene, terpinene, copaene, α/β-caryophyllene) pass into the cheese with the feeding regimen, and the unsaturated fatty acid composition is affected.

A high proportion of organic acids (acetic, propionic, 2-methyl propanoic) by microbial activity and free fatty acids (butanoic, 3-methyl butanoic, ethyl octanoate, hexanoic and octanoic acid) due to lipolytic activity and oxidation products of these acids (2-heptanone, 2/3-nonene (E)2-nonanone, nonanol, 3-methylthio—1-propanol) and esters (ethyl butanoate, methyl hexanoate, ethyl hexanoate, 3-methyl butyl octanoate, propyl decanoate, ethyl decanoate, methyl decanoate, ethyl decanoate, ethyl decanoate) contribute its distinctive flavor. Due to these aromatic active ingredients, it has a tongue-biting, throat-burning, creamy, animal-like, lipolytic, fermented, sulphurous, fruity, acidic, and salty flavor. When taken into the mouth, it stimulates the salivary glands.

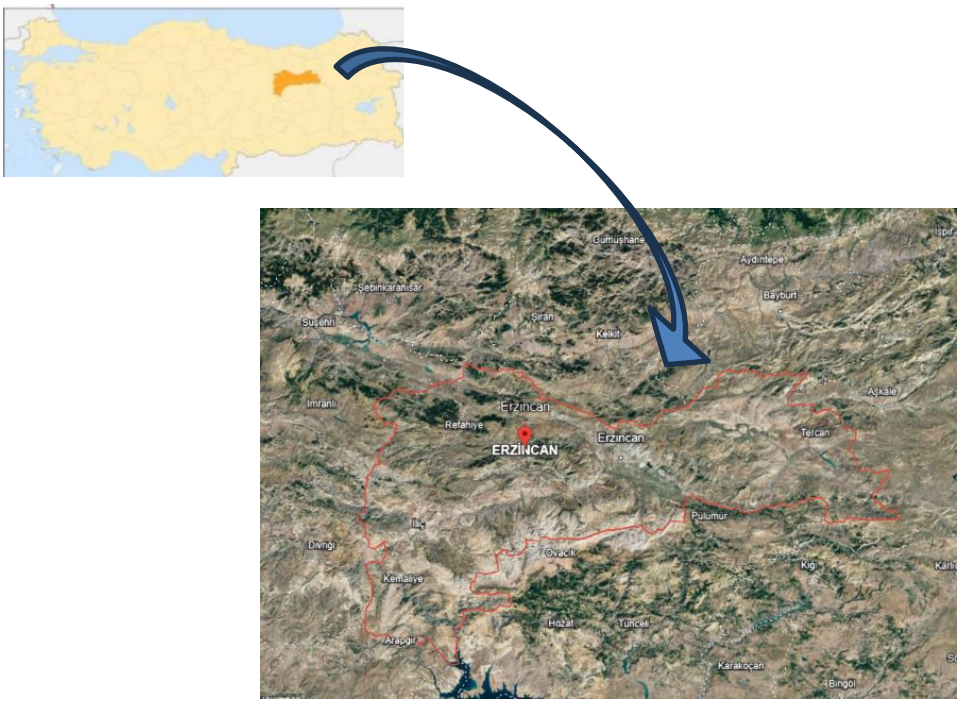
1.3. Definition of the geographical area

Topography

The province of Erzincan is located in the Upper Euphrates Section of the Eastern Anatolia Region with an 11,903 km2 surface area (Figure 2). The area of the province is located between approximately 39° 02′ -40 ° 05′ north latitude and 38° 16′ -40 ° 45′ longitude. Erzurum surrounds Erzincan province from the east, Bingöl from the southeast, Bayburt and Gümüşhane

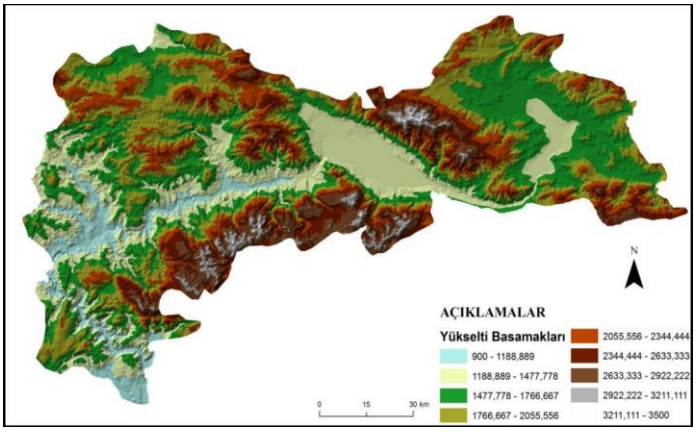
from the north, Giresun from the northwest, Sivas from the west, Tunceli from the south, and Elazığ and Malatya from the southwest.

The landforms in the province of Erzincan consist of the mountain ranges in the south and north, the Euphrates River (Karasu) valley between these ranges, and the Tercan and Erzincan plains extending along this valley. Mountainous areas with heights of up to 3500 m in places cover approximately 93% of the province's land area (Figure 3). In the North, the extensions of the Kop Mountains, Otlukbeli, Esence, and Çimen Mountains extend from east to west. Of these, the summits of the Otlukbeli mountains also form the water division line separating the Yeşilırmak and Euphrates basins from each other. The highest point of this mountainous area is 3549 m at the Keşiş Peak of the Esence Mountains.



Şekil 2. Map of Erzincan province.

The Mercan (Munzur) Mountains range, which extends south of the province, separates the border of Tunceli and Erzincan provinces.



Şekil 3. Physical map of Erzincan province.

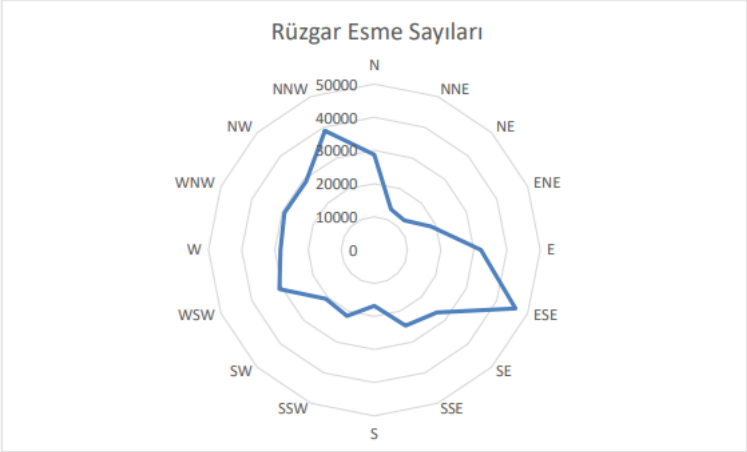
The most important plain areas in the province of Erzincan are Erzincan and Tercan Plains. The most important river that gives the province of Erzincan its topographic character is the Euphrates (Karasu) River. It enters the Erzincan Plain from the east and continues southwest through the plain. The region is the highest in Turkey (1141 m), with an average elevation of over 1800 meters. While the average slope in Turkey is 17.3%, the average of the Eastern Anatolia Region is 21.4%. In the Eastern Anatolia Region, it is from the Hakkari Region (35.5%). Then, the section with the highest slope values is the Upper Euphrates Section, which has a rate of 22.9%. The Erzincan Plain is surrounded by mountainous areas with relative height, which cannot be found in almost any plain of Turkey. Although the plain floor is at an average altitude of 1200 m, it is surrounded by mountain ranges exceeding 3000 m.

When the topographic analysis of the region is made, it is appropriate to consider the average elevation in three different groupings. The first step of the provincial lands is between 800-1500 meters (27%). It is the altitude zone where human and economic activities can be carried out most intensively. The second elevation step is the 1501-2500 meters (63%) zone. This part of the provincial lands is mountainous, rugged, profoundly split, has high slope values, and constitutes the transhumance activity area. Areas above 2500 m, which form high rocky peaks and areas devoid of vegetation, constitute 10%.

Climate

Erzincan province has a semi-arid continental climate with cold and rainy winters and dry and hot summers. Turkey and the Eastern Anatolia Region have different characteristics compared to their surroundings regarding climatic characteristics. Because of topographic and aspect factors, local air conditioning conditions are experienced in Erzincan compared to its surroundings. According to meteorological data for many years (1930-2020), the average annual temperature in Erzincan is 10.9ºC, and the average annual precipitation is 367.2 mm. According to the average temperature for many years, the temperatures between 1.2ºC and -3 ºC in winter are between 20°C and 24.1°C in summer. In some years, the lowest temperatures were measured in January at – 5.9ºC and the highest in July at 31.6ºC. The average annual sunny day is around 105.4, while the average cloudy day is around 197.9. The average yearly pressure in Erzincan for many years was recorded as 878.1 mb. This value is relatively lower than the pressure value of 1013 mb, accepted as Earth's average pressure value.

Erzincan has two dominant wind directions, ESE/SE/SSE (SE) and NNW/N (NW), blowing in different seasons. In Erzincan, the prevailing wind direction is ESE in the first place, NNW in the second place, and E in the third place. The north winds, which arise from the difference in warming between the mountain and the plain, manifest themselves most clearly in July and August, depending on the severity of the warming.



Şekil 4. Wind map of Erzincan province..

This wind, which regularly blows at almost the same time nearly every day of the summer months, brings a coolness to the plain and thus reduces the effects of the severe heat of July-August, and causes an increase in the temperature difference between day and night in summer.

The monthly average relative humidity values vary between 52.3% and 74.7%, and the annual average relative humidity is 64.2%. The average monthly relative humidity is high in winter and low in summer. However, in June, July, August, and September, the relative humidity drops below 60%; in other months, it is above 60%. The months with the highest relative humidity are November, December, January, and February. It is seen that the lowest relative humidity is 23% in July and August.

In the high mountainous areas around Erzincan, precipitation exceeds 1000 mm in places, but precipitation is low in the Erzincan plain. For this reason, Erzincan has an average annual rainfall of 367.2 mm. The soil is generally dry in Erzincan, where there is a need for more water. Therefore, the vegetation consists of steppe formations. Considering these features, it is seen that continental climatic conditions are experienced in Erzincan.

Plantation

As of 2019, 36% of Erzincan's current land assets consist of meadow-pasture land, 21% forest and heathland, 18% cultivable agricultural land, and 25% non-arable areas, along with other areas. Regarding land presence, the high (36%) value of the province's meadow-pasture regions reflects the province's morphological structure and climatic character, where mountainous and partially lowland areas occupy a large area. The province is a suitable region for livestock activities as in the rest of the region with its broad meadow-pasture potential (Polat and Yalçın, 2020).

According to the usage of the cultivated agricultural areas in Erzincan, field agriculture is dominant, with a rate of 43%. According to the production branches of field crops, the most cultivated crops are wheat, barley, rye, dry beans, sugar beet, and forage crops (alfalfa, sainfoin,

vetch). In the province, wheat and barley from the grain group and alfalfa from forage crops constitute the first three rows according to the cultivation areas in field products.

The economy of the Erzincan region is mainly based on agriculture; the agricultural economy is primarily based on animal husbandry, and livestock activities are based on meadows and pastures (Dolun and Önen, 2017). Plateaus cover 5% of the total area of the province. On the extensions of the Munzur mountains in the south, especially in the region of Koshan Mountain, the plateaus are covered with sparse and short grasses. In the east, there are fertile plateaus on the extensions of the Cemal Mountains in Erzincan, located on the Erzurum-Erzincan-Bingöl border. Of these plateaus, Çimen, Melan and Sarıçiçek plateaus have rich vegetation (Anonymous, 2018). In addition to these studies, 596 endemic taxa have been identified in Erzincan province, 64 of which are specific to Erzincan province (Kandemir et al., 2022).

It is known that 'Erzincan Tulum Peyniri' was processed by members of the Şavak tribe who lived in a semi-nomadic state in the past. Historians claim that these nomads were a branch of the Oghuz tribe. Therefore, this cheese is thought to have a history close to a millennium. These tribe members, whose primary source of livelihood was animal husbandry and especially sheep breeding, took their herds to the high-altitude plateaus of Erzincan province in late spring and early summer and processed them into 'Erzincan Tulum Peyniri'. However, over time, both the breeding of dairy animals and the production of cheese became widespread in the province of Erzincan. 'Erzincan Tulum Peyniri' was produced industrially, and this type of cheese became famous as 'Erzincan Tulum Peyniri.'

1.4. Proof of origin

Erzincan Chamber of Commerce and Industry keeps records on cheese producers, production areas, industrial facilities, processing, packaging and storage. The Chamber also performs the duties of secretariat and coordinating the supervisory authority. The basic principle here is to establish a product tracking and traceability system and to carry out periodic inspections and surveillance. Erzincan Chamber of Commerce and Industry will work together with Erzincan Provincial Directorates of Agriculture and Forestry, which is an organization affiliated to the ministry and inspects the compliance of the use of geographical indications related to agriculture and food with the characteristics specified in the registration.

The basic traceability system works as follows:

- The first crucial step in the traceability system is the ear tagging of all animals. Tagging is followed by the mandatory registration of each newly born animal with the Erzincan Provincial Directorate of Agriculture and Forestry within 21 days of birth. The authorities are responsible for the tagging, and all the pertinent information about the animal is meticulously recorded on the national database. This data is kept until the animal dies or is slaughtered.

- After milk collection, the bulk milk is transferred to the dairy plant. During milk reception, the dairy plant should fill in a" producer slip" indicating the producer and quantity of milk.
- Each day, production is labelled and recorded as a separate lot.
- After processing, the producers are obliged to write an invoice when the product is transferred to the customer, in which the product quantity and consumer information are included. To ensure traceability, the producers should also record the invoice with the lot number. These documents should be kept as long as the dairy plant runs.

As for the audit, Erzincan Provincial Directorate of Agriculture and Forestry, is responsible for ensuring physical and chemical analyses specified in 1.2, fulfilment of labelling criteria specified in 1.8. Audit criteria are as follows:

a. The geographical area from which milk is supplied.
b. Production Method
    i. Breed of animals from which milk is provided.
    ii. Cheese production stages.
    iii. Maturation period.
c. Physical properties of the product
    i. White to light yellow color
    ii. Medium hardness
    iii. Crumble structure
d. Chemical properties of the product.
e. Flavor of the product.
f. Packaging.
g. Use of PDO logo and 'Erzincan Tulum Peyniri' name

1.5. Description of the method of obtaining the agricultural product or foodstuff

Sheep breed, feeding and milk composition

The milk of Akkaraman sheep, fed at the geographical border, is milked between the 4th and 9th months of the year (Figure 5). The Akkaraman sheep breed is known as a combined breed. Akkaraman, a very productive breed of meat and milk, is frequently preferred by sheep breeders. The Akkaraman sheep breed, which can easily adapt to all weather conditions, is bred in the provinces of Tunceli, Erzincan, and Elazig. They show an excellent resistance to diseases. This breed, resistant to long road walks, has developed with the herd instinct. They can adapt to cold weather conditions in a short time.



Figure 5. Akkaraman sheep breed

The milk used in the production of 'Erzincan Tulum Peyniri' is supplied from Akkaraman sheep breed which are milked between the fourth and ninth months of the year. Akkaraman sheep breed, must be fed within the geographical border of Erzincan province, The designated area has natural pastures rich in local aromatic plant populations. During spring and summer months, the animals are fed on pastures. During winter months, they are fed with hay harvested from the pastures found in the geographical area. In both situations, the producers may include winter cereals produced in the Erzincan province in the daily ratio. The fodder fed to these animals does not contain concentrated animal feed. The minimum average grazing season per year is six months. Akkaraman sheep milk is characterized by high-fat content (>6%) and high unsaturated fatty acids. These are related to the genetics of the dairy animal and the feeding regime in pastures and meadows in the demarcated area.

According to the data of the Turkish Statistical Institute (TUIK, 2023) for 2022, there are over 500 thousand heads of domestic sheep and over 50,000 heads of domestic goat breeds in Erzincan. Around 17,500 tons of milk is produced, including over 15,000 tons of sheep and around 2500 tons of goat milk.

Cheese production

In the 'Erzincan Tulum Peyniri' production, after the raw milk is accepted into the enterprise, it is filtered through cloth filters, and possible impurities are removed. Fat is not removed from milk. A maximum of 5% Morkaraman sheep's milk or goat's milk can be added to this milk. The milk taken into the fermentation boilers is rested for about 2 hours, and 1-3% traditionally prepared rennet is added to the milk at a temperature of 28-32°C. Traditional rennet used in the production of 'Erzincan Tulum Peyniri' is obtained by adding 6-7 dried lamb abomasum or 3-4 calf abomasum to 25-30 liters of whey containing approximately 10% NaCl and keeping them for 1-2 weeks. At the end of this time, the whey is filtered through a cotton filter and used.

The coagulation time of milk varies between 60-90 minutes. After this stage, the clot is broken to a size of about 1 cm3, filled in small cloth bags or cloth sacks, and left to filter on its own. In the meantime, the bags are placed alternately on each other during the day (Figure 6a). Then, the curd, which is shredded into pea-sized pieces by hand or with wooden mixers, is salted with 2-2.5% spring salt obtained from the Kemah district of Erzincan province and placed in 50 kg bags by pressing tightly. The mouths of the bags are sewn and stacked on top of each other.

The cloth bags, which are kept this way for 5-6 days, are emptied into the boats again at the end of this period and crumbled, and if necessary, sprinkle with 1% salt; clean bags are filled again and kept for another 3-5 days. After about ten days of waiting, the cheeses, which are completely drained, are placed in cold storage. Once sufficiently drained, the cheese is emptied into a vat and shredded back into pea-sized pieces (Figure 6b).

In some dairies, crumbled cheese is stirred every 2-3 hours and left to rest for 18-24 hours. Thus, partial oxidation and an increased number of microorganisms are achieved during maturation.



Figure 6. Green cheese left for drainage in cotton bags (a). Crumbeled cheese (b).

Filling

The pre-processed cheese is filled into plastic drums, pre-prepared from goat skin bags, rarely sheep or lambskins, by hand and tightly so that there is no air space (Figure 7). Skin bags can take about 35-50 kg, sheep skin bags about 50-70 kg, and lamb skin bags (6-7 months old) can get 25-35 kg of cheese.



Figure 7. Filling steps of 'Erzincan Tulum Peyniri' into a goat skin bag.

The food grade plastic drums are filled manually or by machine (Figure 8). These drums cotain 25 kg.



Figure 8. Filling steps of 'Erzincan Tulum Peyniri' into food grade plastic drums.

During the ripening process, the end of the drums, called *biz*, is pierced in 20-50 places with a pointed nail-shaped tool to remove excess water from the cheese in the drum (Figure 9). 1 kg of 'Erzincan Tulum Peyniri' is obtained from 4-5 liters of milk.



Figure 9. Biz.

Ripening and storage

'Erzincan Tulum Peyniri,' which was matured in caves in the past, is now offered to the market after being matured in cold storage at a temperature of -2 ° C - 0 ° C for at least four months. After the ripening period has ended, it can be stored for up to 12 months in the same conditions (Figure 10). Sometimes, the cheese whose ripening process is completed is filled in smaller packages (1, 3, and 5 kg) and offered for sale.



Figure 10. Storage of 'Erzincan Tulum Peyniri' in cold room.

1.6. Link

Specificity of the Geographical Area

Due to the unique geography of Erzincan province (plains at an altitude of 1800 m and steep mountains at the height of 3000 m), its microclimate, pasture, meadow, and endemic plants affect the milk composition of 'Erzincan Tulum Peyniri'. The Akkaraman sheep breed, which has adapted to this harsh geography and climate, is another crucial element for milk production, which gives the characteristic features of cheese. The high-fat content of Akkaraman milk contributes to the cheese's creaminess and the milk fat's flavor during the maturation phase by lypolizing both free fatty acids. Due to the harsh climate, cool climate cereals are produced in the plain, and there are pasture and meadow areas in the springs next to endemic plants.

Human Factors

'Erzincan Tulum Peyniri' is an artisanal cheese from semi-nomadic tribes of origin. Therefore, human knowledge and experience are of great importance in cheese quality. Crumbling and salting the curd during the straining of the cheese and repeating this process at least twice causes the formation of the characteristic granular texture of the cheese; on the other hand, it causes the partial oxidation of the fat in the cheese, thus causing the development of flavour and encouraging bacterial growth.

Since the milk used is whole-fat milk, the cheese has a long syneresis time at ambient temperature; cheese masters decide when to stop straining, the way of salting, and the amount of salt to control the water activity and microbial activity in the cheese. Thus, the controlled progress of fermentation and flavour formation in cheese is ensured. Tightly filling the cheese into the skin bags or plastic drums requires skill. Any air sack in cheese causes the deterioration of the cheese. As for cheeses tightly filled in plastic drums, multiple small holes must be opened to complete the syneresis, reduce the water activity of the cheese during maturation, and provide the control of microorganisms and enzymatic activity.

Finally, preparing the skin bags from which the cheese is to be filled requires a separate experience and dexterity. First, the skin of the slaughtered goat and sheep is removed, cleaned, salted, and dried in the so-called 'overalls' without being damaged and torn apart, which requires mastery, knowledge, and skill.

Casual Factors

The quality and distinctive characteristics of 'Erzincan Tulum Peyniri' is under the influence of the climate, the dairy animal adapted to this climate and geography, and the production technique in the demarcated area. Since it is a cheese that has produced in this geography for centuries, first by semi-nomadic societies and then produced by settlers, it is directly related to the human factor in terms of production technique and packaging used.

' Erzincan Tulum Peyniri' has also been the subject of much scientific research. It is known that the first scientific studies went back to 1938 (İzmen, 1938). It has been determined that six doctoral and seven master's studies have been carried out on this cheese.

1.7. CONTROLS

ERZİNCAN CHAMBER OF COMMERCE AND INDUSTRY
ERZİNCAN TİCARET VE SANAYİ ODASI

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REPUBLIC OF TURKEY MINISTRY OF AGRICULTURE AND FORESTRY,
ERZİNCAN DISTRICT DIRECTORATE OF AGRICULTURE AND FORESTRY
(Audit Body)

Contact information
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Republic of Turkey Ministry of Agriculture and Forestry, Erzincan Province Directorate of Agriculture and Forestry controls whether 'Erzincan Tulum Peyniri' has the characteristics specified in Article 1.2 and whether it comes from the geographical area specified in Article 1.3 and whether it is produced according to the production method specified in Article 1.5. and finally checks whether it complies with the labelling requirements specified in Article 1.8.

1.8.Labeling

In addition to the compulsory information provided for by legislation on the labelling and presentation of foodstuffs, labels must include the following:

— The name of the designation 'Erzincan Tulum Peyniri',

— Trade name and address or short name and address or registered mark of the producer,

— European Union PDO logo

2. APPLICANT GROUP

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Erzincan Chamber of Commerce and Industry was established in 1923 as a non-profit semi-public organization in its region based on Article 4 of the Law on Chambers and Commodity Exchanges with the Union of Chambers and Commodity Exchanges of Turkey No. 5174. As a professional organization, it is a profession like a public institution with legal personality, established in order to meet the common needs of its members in Erzincan, to facilitate their professional activities, to ensure the development of the profession in accordance with the general interests, to maintain professional discipline, morality, and solidarity in order to ensure honesty and trust in the relations of its members with each other and with the public and to fulfill the duties assigned to the chambers by the legislation and the services written in this Law Company. Among its members are those who undertake cheese production using the name 'Erzincan Tulum Peyniri'.

Erzincan Chamber of Commerce and Industry may make proposals, petitions, and applications to the relevant public institutions on issues within its field of activity. Erzincan Chamber of Commerce and Industry has the right to file a lawsuit on behalf of some or all of its members in case of interest. It also provides monitoring and reporting to the relevant authorities of practices that may distort competition through agreements, decisions, or consistent activities.

Erzincan Chamber of Commerce and Industry has 3,500 real and legal entity members. It is a professional organization established to facilitate its members' professional activities and help them in business development and target market. Its members are engaged in the processing and marketing agricultural and livestock products.

Erzincan Chamber of Commerce and Industry has applied for the PDO registration of 'Erzincan Tulum Peyniri' in Turkey. The institution monitors the producers of 'Erzincan Tulum Peyniri' and observes the activities of its members.

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