EXPERT EXAMINATION OF LEATHER IN INTERNATIONAL TRADE: UKRAINIAN EXPERIENCE

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ABSTRACT. In the article the state of the market, volumes of export and import of leather are analyzed. The procedure of leather identification expert examination for customs purposes in international trade is showed. Identification expert examination of leather was carried out and its results were issued for customs purposes. The code of leather according to the Harmonized Commodity Description and Coding System (HS) and the Ukrainian Classification of Goods for Foreign Economic Activity (UCGFEA) is defined based on the results of identification expert examination.

KEY WORDS: leather, genuine leather, export, import, identification expert examination, customs purpose, international trade, the HS, the UCGFEA.

EXAMINARE SPECIALIZATĂ A PIEILOR ÎN COMERȚUL INTERNAȚIONAL: EXPERIENȚA UCRAINEI

REZUMAT. Articolul analizează starea pieței, volumele de export și import de piele. Este prezentată procedura de examinare specializată pentru identificarea pieilor în scopuri vamale în comerțul internațional. S-a efectuat examinarea pieilor pentru identificare, iar rezultatele acesteia au fost emise în scopuri vamale. Codul pentru piele în conformitate cu Sistemul armonizat de denumire și codificare a mărfurilor (SA) și Clasificarea ucraineană a mărfurilor pentru activități economice străine (UCGFEA) este definit pe baza rezultatelor examinării specializate.

CUVINTE CHEIE: piele, piele naturală, export, import, examinare specializată, scop vamal, comerț internațional, SA, UCGFEA.

L'EXAMEN D'EXPERTS DU CUIR DANS LE COMMERCE INTERNATIONAL : L'EXPÉRIENCE UKRAINIENNE

RÉSUMÉ. Dans l'article, l'état du marché, les volumes d'exportation et d'importation de cuir sont analysés. La procédure pour l'examen d'experts pour l'identification du cuir à des fins douanières dans le commerce international est présentée. Une expertise d'identification du cuir a été réalisée et ses résultats ont été délivrés à des fins douanières. Le code du cuir selon le Système harmonisé de désignation et de codification des marchandises (SH) et la Classification ukrainienne des marchandises résultant d'une activité économique avec l'étranger (UCGFEA) est défini sur la base des résultats de l'examen d'experts pour l'identification.

MOTS CLÉS : cuir, cuir véritable, exportation, importation, expertise d'identification, des fins douanières, commerce international, le SH, l'UCGFEA.

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INTRODUCTION

Leather goods are articles or materials created from leather. Full-grain leather, top grain leather, corrected grain articles, tanned leather, and more forms of leather exist. Gloves, garments, haberdashery, bags, footwear, furniture, automotive upholstery leathers, and other items made of leather are examples of leather goods. One of the primary driving factors influencing market expansion is an increase in the demand for leather in the creation of garments.

Leather industry is one of the oldest manufacturing sectors. The raw material used in leather industry is derived from the livestock or animal farming industry, then being put through several processes including tanning and finishing etc. Today, leather is still one of the most luxury materials that are used to produce a wide range of high-end products such as leather footwear, leather bags, leather garments, and so on.

The market is mainly driven by rising consumer disposable income, improved living standards, changing fashion trends, and growing domestic and international tourism. The rising demand for comfortable, trendy, and fancy leather apparel, footwear, and accessories, along with growing brand awareness, is expected to have a positive impact on the market. According to the growth of demand for goods, the demand for leather will also increase. With technical development the production of leather substitutes increases, therefore at customs clearance it is important to carry out identification expert examination.

The assortment of leather and leather-like products is quite wide: genuine, artificial and synthetic leather. Depending on the stages of processing, natural leathers are processed hides and usually without hair. These characteristics affect the classification of imported goods, their customs value, duty rate, non-tariff regulation measures and other peculiarities of international trade operations.

In order to levy the correct amount of customs duties, customs officials should check the correctness of leather identification and classification. Leather as object of international trade should be classified according to the Harmonized Commodity Description and Coding System (HS). The Ukrainian Classification of Goods for Foreign Economic Activity (UCGFEA) developed based on the HS and is used in foreign trade activity of Ukraine. The identification expert examination allows to confirm that the goods belong to the UCGFEA corresponding code. So, identification expert examination is very important in leather materials trade and determination compliance of goods to code according to the UCGFEA.

The article aims to develop criteria, indicators, methods and means of expert examination of natural leather and conduct an expert examination of natural leather for customs purposes in international trade. The analysis of leather market related to Ukraine's position in the world was presented.

The World and Ukrainian Market of Leather

The global Leather Goods market was valued at USD 400 billion (bln) in 2021 which is expected to reach USD 703.5 bln by 2027 at a Compound Annual Growth Rate (CAGR) 8.78 % from 2021-2027 [1].

There are significant volumes of leather imports to Ukraine, namely 155.3 million (mln) USD in 2021. Moreover, tanned leather with additional processing was imported in the amount of 141.8 mln USD. Ukraine's imports represent 1.7 % of world imports for this product, and our country ranking in world imports is 18 [2].

In the foreign economic activity of the enterprises of the leather industry, the ratio of import-export depends on the state of the processing material: raw materials, semi-finished products, crust or finished leather.

In order to analyze exports and imports volume as well as for customs clearance purpose it is quite important to correctly classify leather according to the UCGFEA and HS. According to the mentioned documents genuine leather classifiers in section VIII, group 41 Raw hides and skins (other than natural and faux fur), tanned leather (or semi-finished items) and finished leather [3].

In turn, the group is divided into commodity heading. So raw hides have the code 4101-4103, which depends on the type of raw material: 4101 – from the hides of

cattle or animals of the equine family; 4102 – from skins of sheep or lambs; 4103 – from other animals. Tanned (semi-finished items) or crusty leather (crust leathers are tanned leathers processed by neutralization and fatliquoring or neutralization, retanning, dyeing and fatliquoring) is classified under codes 4104-4106, which also depends on the type of raw material: 4104 – from the hides of cattle or animals of the equine family; 4105 – from skins of sheep or lambs; 4106 – from other animals. Leather additionally treated after tanning is classified under codes 4107-4115. The code number depends on the type of raw material and method of finishing: 4107 – from the hides of cattle or animals of the equine family; 4112 – from skins of sheep or lambs; 4113 – from other animals; 4114 – suede; patent leather and multilayer patent leather; metallized leather and 4115 – composite leather for comparison of data.

According to the International Trade Center data [2], we will analyze the dynamics and volume of imports to Ukraine in group 41 during 2016-2021 (Fig. 1). In general, in 2021 products of group 41 were imported to Ukraine in the amount of 155.3 mln USD. Headings 4101, 4104 and 4107 are characterized by the same trend of import development during 2016-2021 and occupies the largest shares in the volume of import. The main demand is observed for commodity heading 4107, in 2021 imports of 4107 amounted to 90.2% among group 41. The share of imports of 4101 is 3.5%, 4104-3.2%, 4113-1.1%. The share of imports in commodity headings 4112, 4114, 4115 is less than 1%. Import of product heading 4102, 4103, 4105, 4106, 4108, 4109, 4110, 4111 is absent or in very small volumes, which allows them to be neglected.

There is an increase in imports during 2016-2018, and in 2019-2020 – decline. All commodity headings are characterized by a decline in 2020 due to the global pandemic. Import of leather increased in 2021, with the exception of product headings 4113 and 4114.

Thus, by type of raw material, the greatest demand is for leathers made from the hides of cattle or animals. The largest share is occupied by leather treated after tanning.

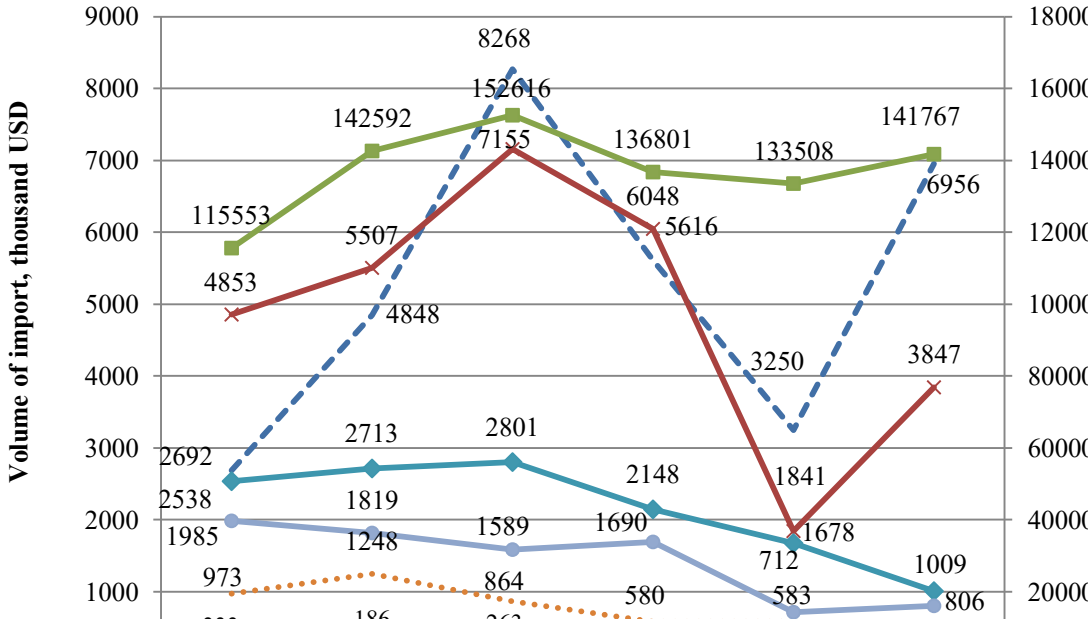


Figure 1. Volume and dynamics of imports of leather during 2016-2021, thousand USD [2]

Then we will analyze the geographical structure of export-import operations with goods of group 41 in the world in 2016-2021. The top exporting countries by the value of exported products are shown in Figure 2. The world leader is Italy with a share of 19%. Next are the USA with a share of 9.9% and Brazil with a share of 7.5%. Ukraine has only 0.5% of the market.

The top importing countries in terms of the imported products value in group 41 in 2021 are shown in Figure 2. The leader among importers is China with a market share of 20%. Also in the top 3 is Italy with a share of 12.2% and Vietnam – 8.9%. Ukraine occupies 0.8% of the import market.

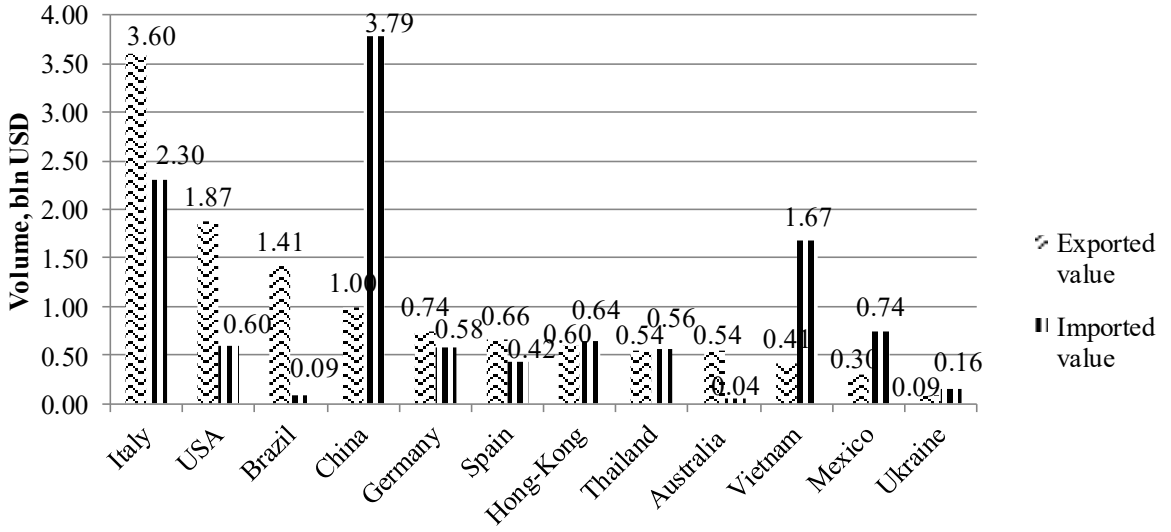


Figure 2. Exporting and importing countries of product of the group 41 in the world in 2021, bln USD [2]

As we have determined, the greatest demand among imported leathers is the leather of heading 4107. Also, we will identify the main counterparties that exported leather of heading 4107 to Ukraine (Fig. 3) [2].

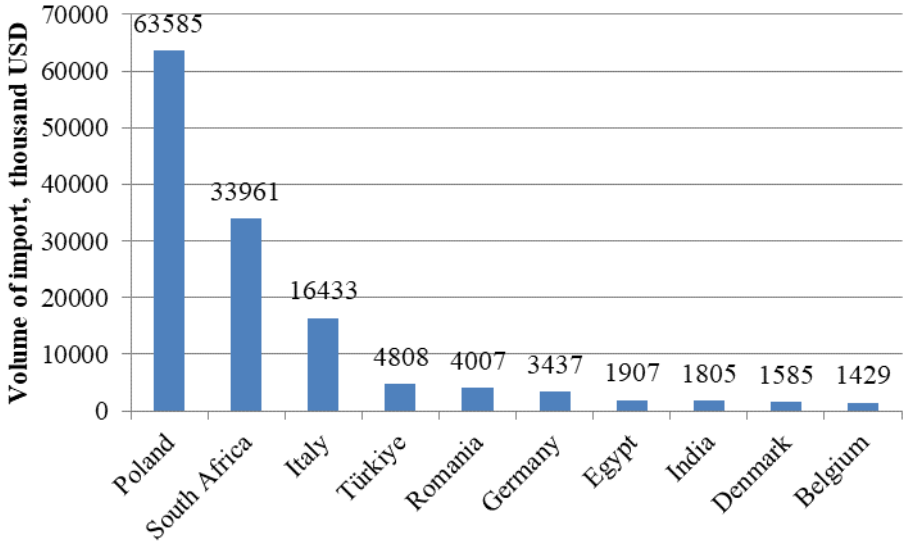


Figure 3. The biggest exporting countries of heading 4107 leather in 2021 to Ukraine, thousand USD [2]

The total import to Ukraine of goods of commodity position 4107 in 2021 amounted to 141.767 mln USD. Ukraine's imports represent 1.7% of world imports for this product, its ranking in world imports is 18. The biggest exporting countries are Poland with a share of 44.9%, South Africa – 24.0%, Italy – 11.6% (Fig. 4).

The most important outlets for European Union (EU) tanners' production (Fig.

4) are footwear, leather goods, furniture and automotive industry [4].

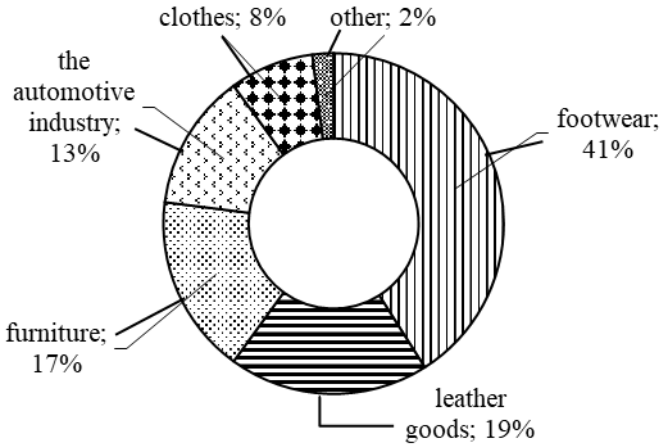


Figure 4. Outlets for EU tanners' production [4]

The processing of hides and skins also generates other by-products, which find outlets in several industry sectors such as pet and animal food production, fine chemicals (including photography and cosmetics), and fertilizers.

Geographically, Asia Pacific is the currently the largest market for leather and leather goods, the region has generated the highest revenue in the world for leather goods over the recent years (Table 1). The developing countries such as India, China and Dubai are expected to pose the highest market demand in the near future, mainly due to the rising disposable income and rising inclination towards designer leather bags and accessories. North America also holds one of the biggest markets for this industry in terms of leather imports and leather products consumption [5, 6].

Table 1: Leading leather production countries of the world

№	Country	Average annual production (million sq. ft)	Share of global production, %
1	China	6170	25
2	Brazil	2360	9.5
3	Russia	1652	7
4	India	1560	6.4
5	Italy	1521	6.3
6	South Korea	1140	4.8
7	Argentina	804	3.4
8	USA	719	3
9	Mexico	642	2.7
10	Turkey	529	2.2

China is the largest leather producing country in the world with over 6.1 bln sq ft leather produced every year, representing more than 25% of the annual global leather production. China's leather industry is renowned for producing heavy leather used for manufacturing belts, straps and soles, while light leather used in shoes, bags, and jackets. Most of China's leather output is derived from light bovine hide which accounts for nearly 40% of the total production per year, making China the biggest producer of bovine leather in the world as well. The light leather of sheep and goats is the second largest leather source in China's leather industry.

Brazil is the second largest leather producing country in the world. Brazil's leather industry produces over 2.3 bln sq ft of leather per annum. Leather production in Brazil is majorly light leather produced from bovine. Leather produced from bovine in Brazil is about 1.8 bln sq ft a year, making it the biggest contributor of Brazil's leather industry. Sheep and goat leathers make about 4 percent of the leather industry in Brazil.

So, the global leather industry is booming due to the growing demand for leather products worldwide. The Asia-Pacific is the biggest region in manufacturing of genuine leather, second – South America, third – Europe. The main countries, which exported genuine leather into Ukraine are Poland, South Africa, Italy and Germany. Over the recent years, the growing demand for luxury fashion products such as handbags, wallets and other fashion accessories driven by the rising spending on personal goods has resulted from the rapid increase in the leather production and leather trade around the world.

EXPERIMENTAL

Materials and Methods

Identification expert examination of leather as well as other goods in international trade is appointed, if for clarifying questions that arise in the case of violation of customs rules, there was a need for special knowledge in different sphere of science, technology, art, etc.

Identification expert examination of goods is an important stage of customs control and clearance, the purpose of which is to establish the conformity of information (properties, qualities, indicators) presented for customs control and customs clearance goods, the information contained in the shipping, commercial and other documents on these goods. The obtained results customs officers use for correct classification code of genuine leather according to the UCGFEA as well as determination belonging to leather analogs.

Thus, the object of the research is genuine leather imported to Ukraine. Identification expert examination for customs purposes were conducted using three samples, described in Table 2.

Table 2: Characteristics of leather samples as object of expert examination

Sample No.	Appearance	Name and address of importer	Manufacturer	Country of origin
1		LLC “TC OKTAVA CENTER” 08153, city Boyarka, 51 Bilogorodska str.	Green point	Italy
2		LLC “FOOD INDUSTRIAL” 61033, Kharkiv, Kyiv district, Vologodskyi entrance 2-y, building 2	No information available	Poland
3		LLC “FOOD INDUSTRIAL” 61033, Kharkiv, Kyiv district, Vologodskyi entrance 2-y, building 2	No information available	Poland

To conduct identification expert examination of leather, the following groups of indicators were determined: labeling conformity assessment; organoleptic; instrumental (physical-chemical) and microscopic. Organoleptic research helped to determine the following leather indicators: color, grain pattern, configuration, additional processing. Instrumental (infrared spectroscopy analysis) – to determine qualitative chemical composition by identification of functional groups. Microscopic – to determine grain pattern and structure identification.

External examination was conducted in accordance with the SSTU 2341:94 and ISO 15115:2019 using organoleptic method [7, 8].

The analysis of the grain pattern was performed by comparing with our database of leather samples.

Depending on the hide section of the leather received for the study, either its area (for whole leather) or its linear size (for part of the leather) is determined.

Analysis by infrared (IR) spectroscopy was performed using the Avatar 370 FT-IR Termo Nicolet with Fourier transform additionally equipped with the ZnSe crystal module, which eliminates the need for special sample preparation. The selected leather sample was placed in the device and was pressed with the ZnSe crystal module during the research. Infrared spectra were obtained in the wavelength range 4000-650 cm^{-1}.

To study the structure of the researched samples, a microscopic examination was performed. Microscopic examination of the leather is used to analyze their structure using optical or electronic microscopes on specially prepared samples. Methods of microanalysis determine the shape of the fibers, in compliance with the morphological features inherent in leather. Microscopic examination was performed according to ISO 17131:2012 [9] using an Olympus CX 31 microscope at 10x and 40x magnification and a SZM-45TL stereoscopic microscope at ×7- ×45 magnification.

The identification expert examination was conducted on the basis of the Specialized Laboratory for Expert Examination and Research (SLEER) of the State Customs Service of Ukraine (SCSU) and laboratories of Commodity Science and Customs Affairs Department of State University of Trade and Economics (SUTE).

RESULTS AND DISCUSSIONS

Identification Expert Examination of Leather for Customs Purposes

For conducting identification expert examination of leather, customs officers must send samples to SLEER of the SCSU in order to establish the characteristics influence to classification in accordance with the UCGFEA.

The identification criteria are the characteristics of the goods, which allow to identify the name of the presented goods with the name indicated on the label or in regulatory, shipping documents. The developed criteria, means and methods of identification expert examination of leather are presented in Table 3.

Table 3: Criteria/indicators, means and methods of identification expert examination of leather

Criteria/indicators	Means	Methods
	General	
Product name	Markings, accompanying documents	Compliance check
Manufacturer's name	Markings, accompanying documents	Compliance check
Country of origin	Markings, accompanying documents	Compliance check
	Specific	
Color	Goods, accompanying documents	Organoleptic
Grain pattern	Goods, characteristic images of different leather grain patterns	Visual and microscopic
Chemical composition	Goods, Working instructions Qualitative determination of individual substances, polymeric compounds and components in mixtures products by IR spectroscopy [10, 11]	Qualitative by ATR-FTIR
Morphological structure	Goods, ISO 17131:2020 [9]	Qualitative by microscopy

Means of leather identification are regulations that measure quality indicators and can be used for identification. Identification expert examination of leather includes checking the condition of packaging and labeling, identification of leather, sampling, conducting of organoleptic, physical-chemical parameters and microscopic analysis.

Grain pattern is an important identification parameter of leather. Individual features of each animal species are reflected

not only in the general structure of the skin, but also in the nature of the pattern, so the leather of each animal corresponds to a certain pattern (Fig. 5), in the most significant features that does not change depending on breed, sex or age. The ability to recognize the origin of the leather by its pattern is based on this. Some types of leather, such as the leather of lizards and snakes, have an extremely unique pattern and color, which gives an original look to shoes and other products made of them.

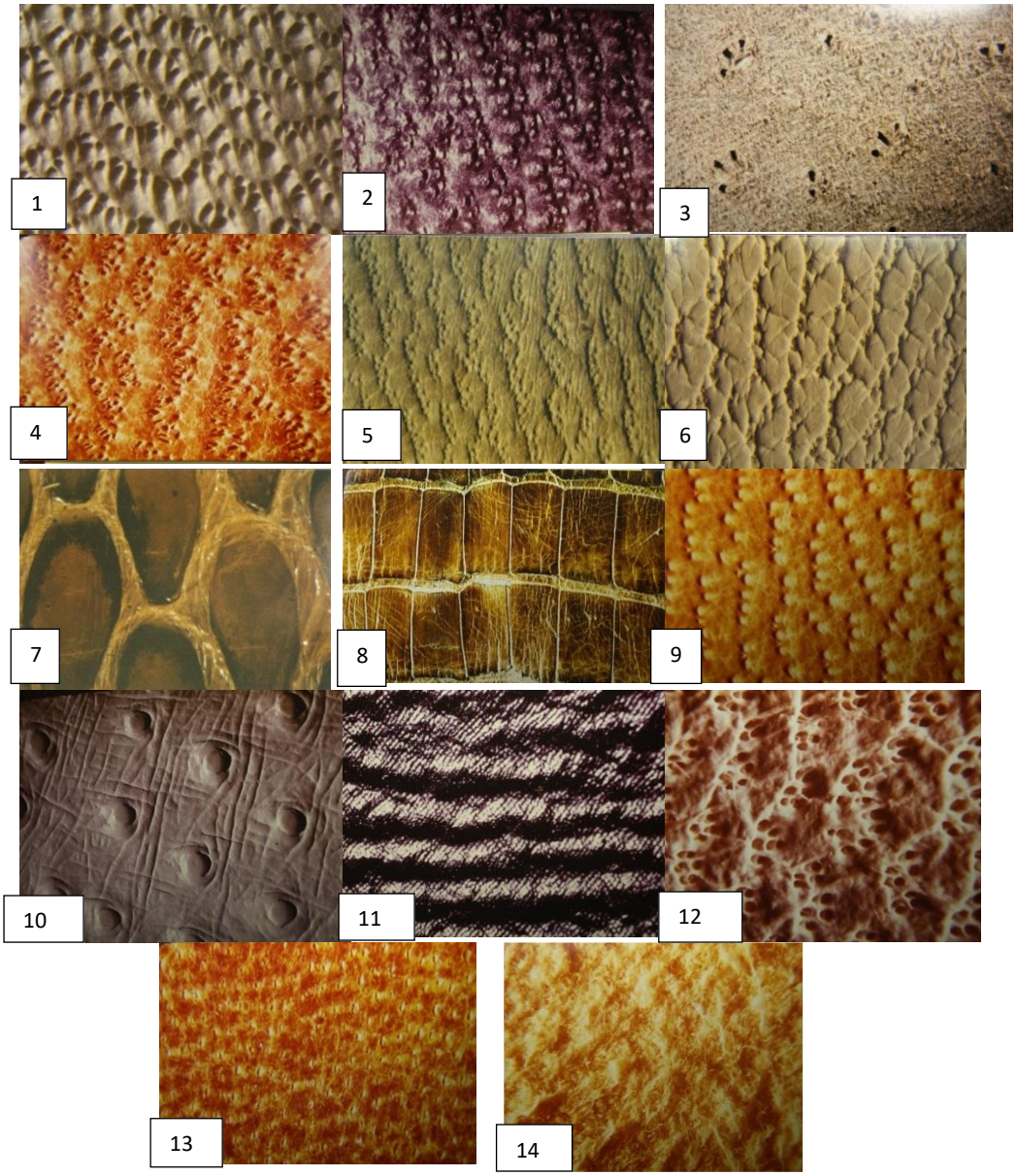
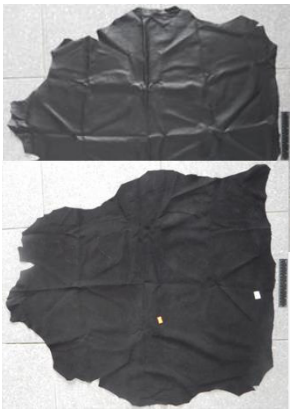
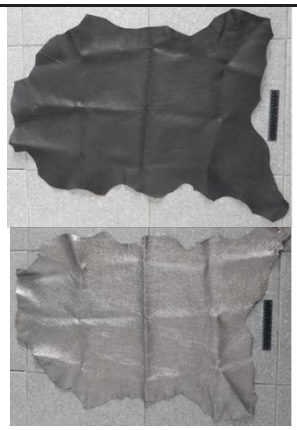


Figure 5. Grain pattern of the different animals' leather: 1-cow; 2-horse; 3-pig; 4-sheep; 5-goat; 6-lamb; 7-snake; 8-alligator; 9-roe deer; 10-ostrich; 11-shark; 12-camel; 13-kangaroo; 14-suede

Obtained results of identification expert examination of leather samples on organoleptic indicators (Table 4) show that the sample 1 is a whole dyed leather. After visual comparison of the sample 1 grain pattern with images shown in Figure 5, we can make a conclusion that this is cow leather. Sample 2 is a whole dyed goat leather. Sample 3 is a whole dyed sheep leather. Sample 1 on the grain side is covered with a silver finishing coat and with flesh side which is dyed in gray. Sample 2 is dyed in black. The grain surface of the sample 3 is painted in black, and the flesh side is finished with a gray coat.

Table 4: Results of identification expert examination of leather on organoleptic indicators

Criteria	Sample 1	2	3
Appearance			
Color	Silver	Black	Front side is black, flesh is gray
Grain pattern	Typical for cow leather	Typical for goat leather	Typical for sheep leather
Configuration	Whole leather	Whole leather	Whole leather
Additional processing	The sample on the grain side is finished with a silver coat. Flesh side is dyed in gray and has a homogeneous fibrous structure	The sample is dyed in black on grain and on flesh sides. The grain side is smooth and has a slight sheen	The grain side of the sample is smooth, matte, dyed in black. Flesh side is completely covered with a thin layer of silver coat

The advantage of organoleptic methods is their availability and simplicity, and the disadvantage is the lack of reliability. Therefore, they cannot be the only criteria for identification. So, for higher objectivity we also used physical-chemical and microscopic methods.

To study the origin of different types of finished leather, microscopic research was conducted. The method allows to quickly assess the structure and the origin of leathers.

Animal skin consists of water, proteins, minerals, carbohydrates, fats and fat-like substances. The largest share in the chemical composition of the hide and skin is water (65-75%), the protein content is 28-30%. The main protein of the dermis is collagen, which content range in 93-97% of their total amount of the proteins in the hide. Others include proteins such as reticulin and elastin, as well as water-soluble globular proteins – albumins, globulins, mucoids, mucins and similar others.

Chemical composition was analyzed by method of FTIR spectroscopy. FTIR spectroscopy relies on the fact that most molecules absorb light in the IR area of the electromagnetic spectrum, converting it into molecular vibration. This absorption characterizes the nature of the chemical bonds that are present in the sample. This absorption is measured using a spectrometer as a function of wavelength (as wavenumbers, typically 4000 – 650 cm^{-1}). The result is an IR spectrum that can be used to identify samples.

The analyze of IR spectra are presented in Figure 6. It is advisable to identify natural leather by the most characteristic bands of collagen, as the dermis structure base. The analysis is based on the presence of the main characteristic oscillations bands.

The most characteristic absorption is found in the frequency ranges 3500−3100 cm^{-1} and 1650−1234 cm^{-1}. The first area corresponds to the valence oscillations of the associated NH_2, NH, and OH^- groups. Peaks at 3343, 3276, 3289 cm^{-1} for samples 1, 2 and 3 accordingly refer to the valence oscillations of N-H. This group takes part in the creation of

intramolecular hydrogen bonds. The bands at 2920, 2917 cm^{-1} and 2847, 2848 cm^{-1} for samples accordingly refer to asymmetric and symmetric valence oscillations of CH_2 groups [11].

The absorption bands of Amide I, Amide II, and Amide III are observed in the area of 1634–1200 cm^{-1}. This area is associated with absorption of C=O carbonyl groups and deformation oscillations of NH groups, in particular amino-, imino groups, and guanidine groups. Peaks at 1634, 1631 cm^{-1} refer to the valence oscillations of C÷O + C÷N (amide I). Peaks at 1549, 1547, 1544 cm^{-1} for samples accordingly refer to the valence oscillations of C÷N + deformation oscillations N-H (amide II). Peaks at 1334, 1335 cm^{-1} refers to the valence oscillations of C-N. Peak 1278, 1284 cm^{-1} refers to the deformation oscillations of N-H + valence oscillations C-C + deformation oscillations C=O (amide III).

In polypeptides and proteins, the identification of bands 1000–1400 cm^{-1} is difficult due to the interference of oscillations of the side groups of amino acid residues and skeletal oscillations of the carbon chain. The interval 1200–1030 cm^{-1} combines a set of peaks: the band 1082 cm^{-1} and 1030 cm^{-1} are characteristic of valence groups CN, C−O and C=C, and the peaks at 1200, 1202 cm^{-1} and the band 1128 cm^{-1} indicate pendulum oscillations of NH^{3+} groups. The bands present in the spectra at frequencies below 1030 cm^{-1} characterize the “skeletal” oscillations of polypeptides and include, mainly, non-planar deformation oscillations of C−H groups and, to a lesser extent, non-planar deformation oscillations of NH− groups (Amide V).

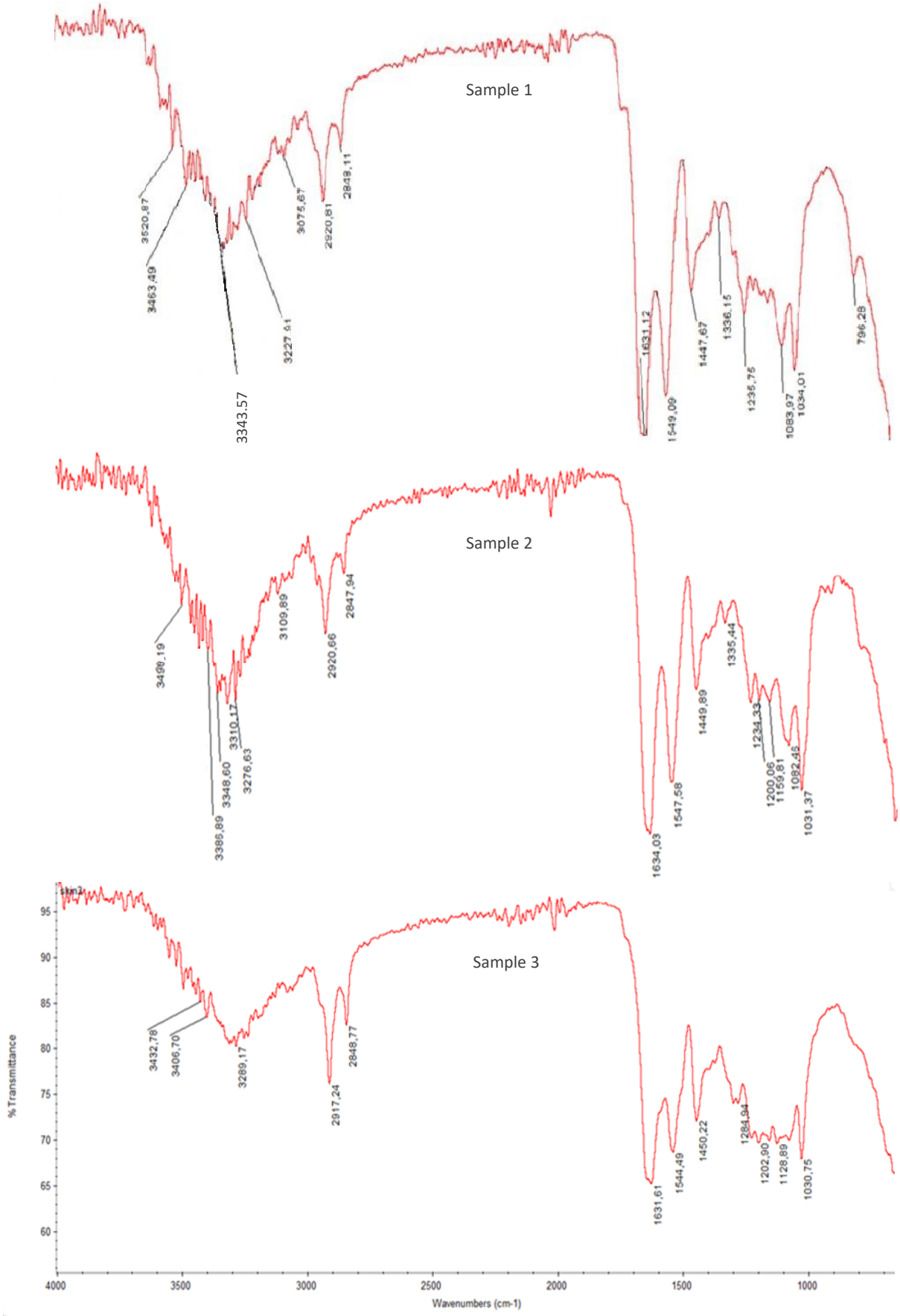


Figure 6. FTIR spectra of the examined leather samples

The main conclusions of FTIR and microscopic analyses regarding the identification of leather samples are presented in Table 5. There are intense absorption bands characteristic of peptide bonds that are present in natural protein (in our case, collagen) in the IR spectrum of the given samples. Structure of all samples has morphological features, characterized for a genuine leather. Taking into account the physical-chemical parameters research results, all test samples are genuine leather.

Table 5: The results of expert examination of leather by FTIR and microscopy

Criteria	Sample		
	1	2	3
Chemical composition	There are intense absorption bands characteristic of peptide bonds that are present in natural protein (collagen, etc.) in the IR spectrum of the given sample (Fig. 6, sample 1).	There are intense absorption bands characteristic of peptide bonds that are present in natural protein (collagen, etc.) in the IR spectrum of the given sample (Fig. 6, sample 2).	There are intense absorption bands characteristic of peptide bonds that are present in natural protein (collagen, etc.) in the IR spectrum of the given sample (Fig. 6, sample 3).
Structure	Has morphological features characteristic of genuine leather.	Has morphological features characteristic of genuine leather.	Has morphological features characteristic of genuine leather.

Based on the results of the identification expert examination, we can make the following conclusions. All samples submitted for examination were in a dry state, soft to the touch. The samples have smooth front surface and flesh surface, which is typical for the natural leather.

The sample 1 is a finished leather in silver color with the flesh side dyed in a similar color. The grain pattern is characteristic for cow leathers.

The front surface of the sample has a relief structure, which is similar in appearance to the surface of leather. The sample on the front side is dried in a silver color.

Examination in the field of view of the microscope revealed that the sample submitted for examination has morphological features characteristic of genuine leather.

There are intense absorption bands characteristic of the peptide bonds that are present in the natural protein (collagen, etc.) in the IR spectrum of the provided sample.

The sample 2 is painted black; has a front and flesh side. The front surface of the sample is smooth, has a slight sheen. Grain pattern is characteristic for goat leather. Microscopic examination revealed that the sample 2 has morphological features characteristic of goat leather.

There are intense absorption bands characteristic of the peptide bonds that are present in the natural protein (collagen, etc.) in the IR spectrum of the sample 2.

The front surface of the sample 3 is smooth, matte, painted black. Flesh side is completely covered with a small layer of silver-thick substance. Pattern is characteristic for sheep leather. Microscopic examination revealed that the sample 3 has morphological features characteristic of sheep leather.

There are intense absorption bands characteristic of the peptide bonds that are present in the natural protein (collagen, etc.) in the IR spectrum of the sample 3.

Therefore, based on the obtained results of identification expert examination and certain characteristics it is possible to determine samples codes according to the UCGFEA. Sample 1 corresponds to the code 4107119000, sample 2 – 4113100000, sample 3 – 4112000000. Appropriate codes according to the HS will be the following: sample 1 – 410711, sample 2 – 411310, sample 3 – 411200.

CONCLUSIONS

Leather and products made of leather such as gloves, garments, bags, footwear, furniture, and many others complete big group of international trade objects of Ukraine as well as many other countries of the World.

Depending on the stages of processing, genuine leather can be untreated with or without hair, tanned or subjected to further processing. These characteristics affect their classification, customs value, duty rate, non-tariff regulation measures and other customs purposes used in international trade operations.

First of all, expert examination allows to determine the correct code of leather and products made of leather according to the Harmonized Commodity Description and Coding System (HS). The Ukrainian Classification of Goods for Foreign Economic Activity (UCGFEA) developed based on the HS and is used in international trade activity in Ukraine.

To conduct identification expert examination of leather, following groups of indicators were determined: labeling conformity assessment; organoleptic; instrumental (physical-chemical) and microscopic. Organoleptic research conducted to determine following leather indicators: color, grain pattern, configuration, additional processing. Instrumental (infrared spectroscopy analysis) – to determine qualitative chemical composition by identification of functional groups. Microscopic – to determine grain pattern and structure identification.

The conducted expert examination results, obtained by using standardized and developed methods, give us opportunity to determine samples codes according to the UCGFEA. Sample 1 corresponds to the code 4107119000, sample 2 – 4113100000, sample 3 – 4112000000. Appropriate codes according to the HS will be the following: sample 1 – 410711, sample 2 – 411310, sample 3 – 411200.

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