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CH.A. Bekmurotov
Tashkent State Technical University

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CERTIFICATION OF VEGETABLE OILS AND QUALITY CONTROL IN THE TECHNOLOGICAL PROCESS OF PRODUCTION

CH.A.Bekmurotov

Tashkent State Technical University

Abstract

The article reviewed the certification and quality control of the technological process for the production of vegetable oil. There is a procedure for packaging, quality control of products, determination of quality indicators and quality control of finished products. The procedure for using refined cottonseed oil and its varieties, the requirements for placement and storage of vegetable oils, as specified in the regulatory documents, the quality control of vegetable oils and other solutions for cottonseed oil are provided. The gas analyzer shows a solution for measuring the amount of solution by painting the tubes of a mixture of gas and air in oil.

Detailed information on the production of vegetable oils, the cost of raw materials, the level of fat content of cotton seeds and the methods used to produce oil from cotton seeds. Methods for certification of vegetable oils, types of quality control, methods of testing and quality determination are presented. It was shown that the procedure for refined production of cottonseed oils and their types, as well as the state of the product classification of products based on the method of producing vegetable oils for consumer purposes, analysis of the sequence of refined oils and refining processes.

Key words: *certification, unit of measure, metrological support, meter, quality indicators, production.*

Food products, technologies intended for its production, storage, transportation and trade technologies, equipment, parts and means must be certified in order to confirm their compliance with the norms and regulations.

The list of products subject to mandatory certification and the procedure for certification are determined in accordance with the legislation.

Summarizing the process of certification of products, we can divide it into the following five main stages:

- application for certification;
- decision on certification fee;
- assessment of the eligibility of the certification object with the requirements set in the assessment of the internship;
- analysis of the results of the evaluation and its formal coordination;
- insp certificate control over the object of certification [1].

Vegetable oils play an important role in a persons diet. These fats are high-calorie and are well digested in the body of a person. They are widely used in the food industry and culinary.

Vegetable oils are obtained from sunflower, cotton, linseed, canape, sesame, poppy, burdock, walnuts, almonds, beans, ground walnuts, soybeans, olive fruit and others. Among these are the most important oils used for food: sunflower, cottonseed, olive, sesame oil, etc. Those that are used for technical purposes are flaxseed, linseed oil, etc. Of these, flax seed oil also has nutritional importance.

In the quality control of vegetable oils, in the determination of the presence of impurities of other solutions in the extraction of widely odour purified cottonseed oil, quality control is carried out by working on the universal gas analyzer UG-2 device.

Vegetable oils are tested on GOST 5471-83. Liquid thermometers in bottles GOST 28498-90 to 100°C degree, in 100 ml cylinders GOST 1770-74 moving in a closed spiral electric plate XD, universal gas analyzer UG-2 measuring pipette for pipes combining the density of coils (compression) to determine the evaporation of the solution 2,10 ml, in 2 kl movement XD, in 1000 ml tube moving from one the hygroscopic gost on XD is tested on 5556 with medical cotton, stopwatch moving on XD.

Embed and store vegetable oils. Vegetable oils are packed in barrels of iron and wood, as well as bottles of 100, 200, 250, 400 and 500 g of clear white color. All types of dishes should be clean, odour, not greasy. Tightly closed bottles with a cork stopper or a cardboard capsule with a slide or a celluloid cap are placed in wooden crates. Vegetable oils should be stored in a closed container at a temperature of 4-6°C (not higher than 10°C) in cool, dry, dark buildings. Under such conditions, fats can be stored up to 1,5-2 years. Fats stored in light bulbs, in an open container and at high temperature remain bitter, change color and the smell becomes unpleasant. Cotton and olive oil blurry at a temperature below 4°C, forming a lump of sediment and solidifying [2].

Quality indicators of fats. The quality of fats is assessed by: color, taste, smell, transparency, moisture content, viscosity and other indicators. Refined oil should be unsalted and taste, transparent. Hydrogenated and unrefined oils-should have a specific taste and smell of the first raw material. High and 1-grade oil (top of the bottom) should be transparent; 2-grade oil should be allowed to become slightly opaque.

Depending on the method of production, refined cottonseed oil is divided into types in sheep:

- obtained by the press method;
- obtained by Extraction method;
- pressed oil – the oil obtained from the compression of the chigit;
- oil obtained by extraction - Organic Solutions (gasoline) milled of hemp, the rest from the extraction of the squeezed oil;
- refined oil - with the help of a neutral solution (in odorless oil);
- odour oil - obtained by processing in a vacuum at 220 - 260° C (high temperature) and depth, which is absent in the processing of oil and by processing with percises and degrading,

irritating substances, sterols, water vapor, taking into account external odors, fatty acids;

- used for the production of oil-grease, soap, alif, technical oil, used for technical purposes.

Vegetable oil is extracted by pressing and extraction with the help of organic lubricants.

To squeeze (crush) this pressed oil is obtained from seeds is processed in a special device.

It can be processed once or 2 times.

It has the ability to dissolve fat – organic, which is obtained by extraction. The oil from the crushed seeds melts and is completely absorbed when gasoline is transferred several times.

The difference of the extract oil from the pressed oil is that in the extract oil there are colored substances. After the gasoline is cleaned (driven), it will have to be cleaned again.

This laboratory work is aimed at determining which way to lubricate. It is assessed as the state of an open mallow in refined oil of a solution (mixture or participation) by extract or press (gasoline). This method is determined by measuring the amount of solution (gasoline) in the gas analyzer, bringing to a state of open mallow by coloring in the indicator tubes of the gas and air mixture in the heated oil.

Accounting for 85-95% of the cost of raw materials in the production of vegetable oils. Cotton seeds are used as raw materials in the production of vegetable oils in the Republic. The fat content of cotton seeds is 22-23%. Precipitation from cotton seeds is carried out in 2 ways: pressing and ecstagination.

Precipitation by pressing involves the following operations: conditioning of the seed according to the degree of moisture content, cleaning of the seed from additives and peel, crushing of the seed maggot, roasting of the crushed maggot, pressing, filtration of the humect fat.

Table. 1.

Depending on the quality indicators and the degree of purification, refined cottonseed oil is produced in the following types and varieties [2].

Type of oil	Sort	General product classification (GPC) code
Refined cottonseed oil obtained by press method		
- odour	Higher	91 41 15 6 1 14
- odour	The first	91 41 15 6 2 14
- odourless	Higher	91 41 15 3 1 14
	Higher	91 41 15 3 1 99
- odourless	The first	91 41 15 3 2 14
	The first	91 41 15 3 3 99

- odourless	Second	91 41 15 3 3 99
Refined cottonseed oil obtained by extraction method		
- odour	Higher	91 41 15 6 5 14
- odour	The first	91 41 15 6 6 14
- odourless	Higher	91 41 15 3 5 99
	The first	91 41 15 3 6 99
	Second	91 41 15 3 8 99

Note: 1. GPC-the general classification of the product includes 10 units of discharge.

2. GPC discharge sign:

Part 1.2. 91-food industry;

Part 3.4. 41-vegetable oils;

Part 5.6. 15-cotton oil;

Part 7. 6-unscented oil; 3-unscented oil;

Part 8. 1.2. and 3. – suitable for high, first and second grade pressed refined cotton oil;

It's 5.6. and 8. - refined cottonseed oil obtained by extraction method of higher, first and second varieties, respectively;

Part 9. 14 packaged oil; 99 - unsalted oil.

After the cotton seed is conditioned according to the degree of moisture content, the seeds are separated from the additives and peel, the formed kernels are crushed and fried. Roasted kernels are pressed and grated on a fine grater.

Table. 2.

Norms for refined cottonseed oil [3].

N	Name of the indicators	Mesers for cotton refining (pressed and extracted)					Control methods
		Deodorized		Non-deodorized			
		Higher sort	The first sort	Higher sort	The first sort	Second sort	
1	2	3	4	5	6	7	8
1	Smell	Scentless		Refined cottonseed oil property without additional odors			On GOST 5472-82
2	Taste	Taste of processed oil		Tasteless	Taste cannot be determined		

3	Affilie	Transparent	On GOST 5472-82
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After the seeds are crushed, it is treated with steam (at 70-80⁰ C). The moisture content of the steaming given seed is 4,5-5,5% and the temperature is 105-110⁰C for 1-2 varieties, the temperature is 5,5-6,5⁰C for 110-150⁰ C for 3-4 varieties. Processing in steaming practically does not change the properties of crushed kernels. But the kernels are of a brown hue. After that, the steamed crushed kernels are given to the Fortpress apparatus for pressing. In fortpressatidaat is obtained by lubricating the crushed kernels. The pressed oil is filtered, after which the filtered and cooled oil up to 400⁰C is sent to the refining shop or ombor[4].

Extraction - method is the main method, the extraction of vegetable oils is currently based on this method. The essence of this method is to influence the extracted materials with the help of solvents. As solvents (it is affected by gasoline, dichlor, ethane, etc.), the solution in oil solvents is called missell. After the extraction process, the solvents are expelled from the fat content, lubricated, and after that lubricated. The degreased residue that comes out as a result of the extraction is treated with a saturated par and is called a shrot. In the lubricating industry, as a result of the use of the extraction method, the oil output will be much higher, and with this method it is possible to achieve komplex processing of seeds with a fat content, the amount of fat remaining in the composition of the porridge from this method will also be much less.

Table 3.**Comparative harakteristics of precipitation methods [3].**

Someone who seeds	Pressing method				Extraction method			
	Fat content of seeds (%)	Precipitation (%)	Loss of fat (%)	Separation of fat from seeds (%)	Fat content of seeds (%)	Precipitation (%)	Loss of fat (%)	Separation of fat from seeds (%)
Cotton swab	20,03	16,39	3,74	80,07	19,58	18,50	1,08	95,0

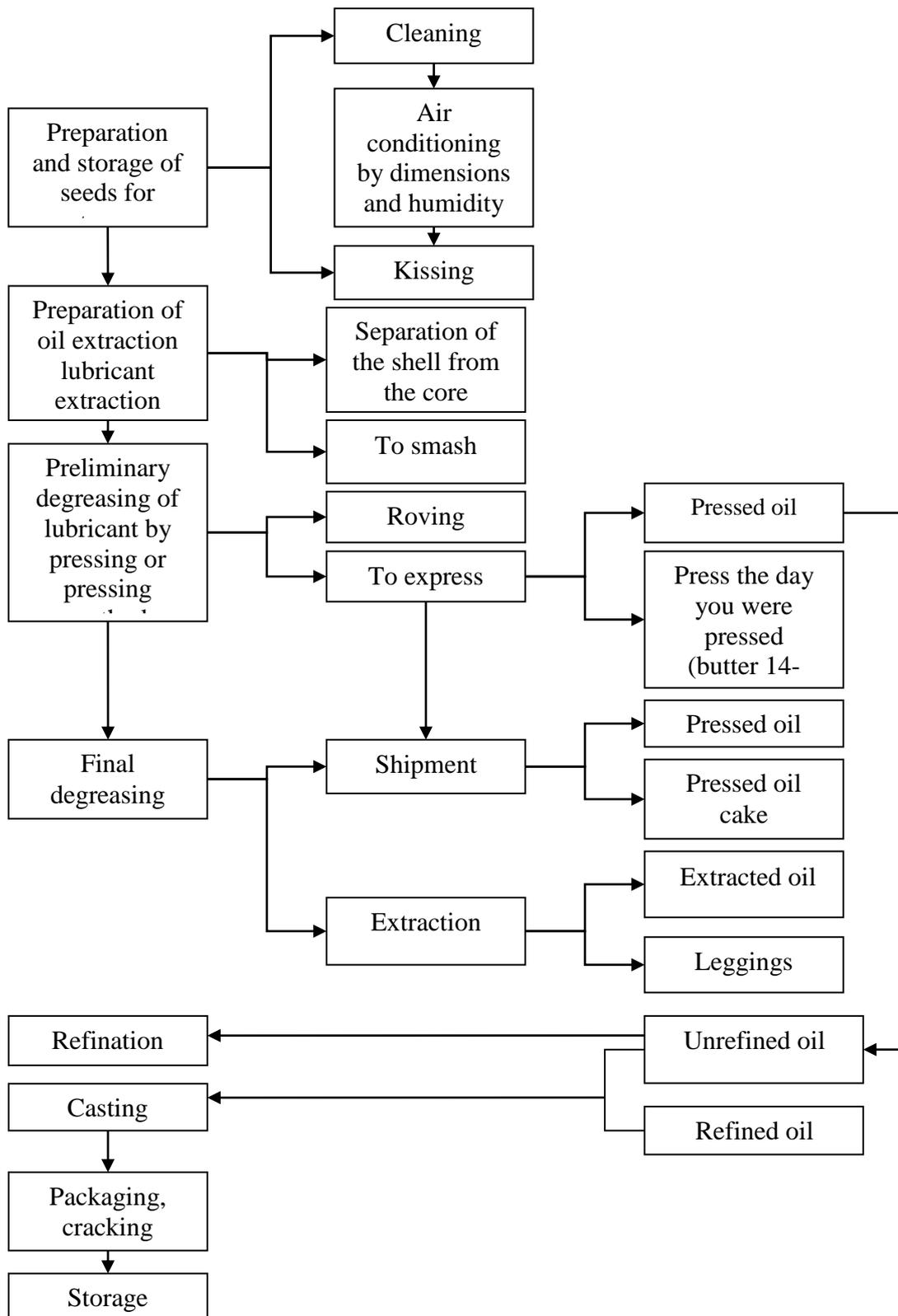


Fig. 1. Technological scheme of production of vegetable oil

Mechanical method of refining oil – purification, centrifuging and filtration mechanical additives and colloidal part of dissolved substances are excluded from the composition of the oil by these methods.

Tincture - in its natural state, the oil is brewed for a certain time in special tinctures. The solid substance in the bun is poured into the bottom of the pan.

Centrifugation - in this process, the use of tubular and scaly centrifuges is lubricated. Filtration – the essence of the process is that the lubricant is passed through the barrier (from the fabric). The most commonly used hardware for filtering is filterpress. Filterpresses will have 15-50 filter holes.

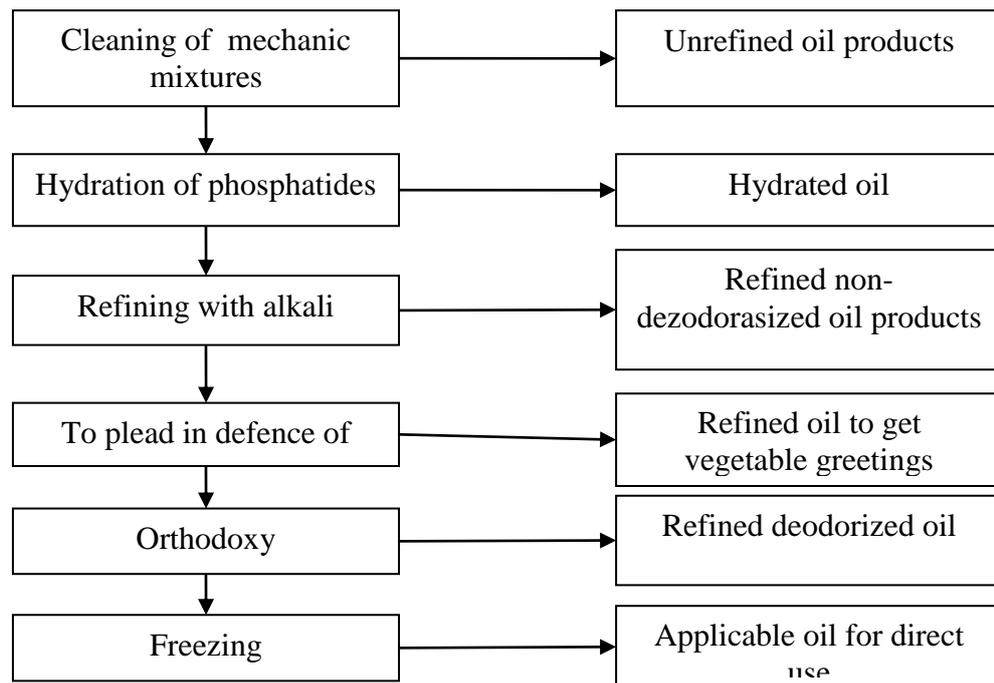


Fig. 2. Technological scheme of the sequence of processes types of removable oil and refining [3].

Chemical method of refining oil – this includes processing of oil with the help of sulfuric acid, hydration, separation of gossipol, alkaline refining. When processing sulfuric acid, the oil with a temperature of 20-25⁰C is slowly affected by sulfuric acid with a content of 90-95%. As a result, the protein and waxy substances from the shavings go to the deposition. It is given to the washing machine after degreasing, and sulfuric acid from the contents of the oil is washed off with hot water.

Hydration - in this method, hot water or steam with a temperature (40-50⁰C) is added to the heated oil (40-50⁰C) in the critical state. As a result of hydration, proteins and mucous substances sink to the bottom of the apparatus as a dark precipitate, and in the form of precipitation, the acid decreases.

The sediment formed as a result of hydration is separated from the fat.

Alkaline refining - this is the use of corrosive alkalis. When treated with alkaline solutions to fat, alkalis interact with free and other additives contained in the fat, resulting in a decrease in the content of acids in the fat and the nitralization of the fat [3].

The procedure for certification of vegetable oils, types of quality control, methods of testing and determination of quality indicators were introduced. Depending on the method of production of vegetable oils for consumption purpose, it was shown to ensure the order of the refined cottonseed oil and their types, as well as the overall classification of the product and the sequence of the removable oil and refining processes were analyzed.

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