# NEW METHODS OF CLEANING OILS FROM SEEDS WITH NON-ESSENTIAL OILS

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## ABSTRACT

In current work air conditioning of oilseeds in temperature and humidity, oil seed gives positive results in oil refining. Moreover, since moisture heat treatment of oilseeds improves digestibility of the shrot, the oil refining process, derived from oil seeds in the presence of sodium aluminate is first with sodium hydroxide solution in water, then with a solution of sodium aluminate leads to increase refined oil yield.

Reduction of cotton crop production areas, increasing Reserve crop areas, creating wide opportunities for the cultivation of non-traditional oil seeds in field conditions. Therefore, in field conditions, wide attention is paid to the cultivation of sunflower, soybeans, Maxar and other seeds as seeds with non-essential oils. The implementation of the production of vegetable oils at the enterprises of production of oil spills from the seeds of the cultivated oil is carried out by technological methods of pressing and extraction, and is involved in the refining process for the purification of the resulting raw oils. Today, alkaline refining methods, which are widely used in practice, have serious drawbacks, alkaline refining requires a relatively high amount of energy consumption. In order to eliminate such shortcomings, special attention was paid to the introduction of new methods in this work in order to improve the technology of alkaline refining of vegetable oils obtained from non-essential oil seeds. Also it is important to air it before processing the oil seeds, so that the oil from the seeds is well refined. When air conditioning is carried out harmoniously, air conditioning by humidity and temperature leads to the fact that the result is effective.

When conditioning is carried out correctly, it is achieved that the moisture and temperature of oilseeds are at a normal level, and that the efficiency of seed oiling (crushing) is high.

Drying oilseeds has always been an important place in the oil and oil industry, since when drying oilseeds, it is important to heat it at the optimum level, taking into account the sensitivity of the enzymes in any oilseeds. Based on the results of the experiment, when the process of water vapor and heat treatment of oilseeds is carried out in the norm, an increase in the degree of digestibility of the protein substances contained in it, as well as the quality of the oil, which has a low content of free fatty acids, is achieved.

Studies and experiments were carried out in laboratory conditions and production tests. As a raw material in the technology of refining, vegetable oils were adopted, which were isolated from soybean seeds grown under local conditions. From research and analysis, modern physico-chemical evaluation methods were used.

When refining oils, as an alkaline solution, sodium hydroxide and aluminum sodium tuzi solution were used. The thickness, quantity, additional part of the alkali solution was determined in relation to the acid number and structural indicators of the oil involved in the refining. The main qualitative and quantitative indicators of the purification process in selected alkaline solutions of soybean oil were analyzed, and the results were presented in 1-2 tables.

**Table 1.**

| Nomenclature of oil indicators | Unit of measurement | Primary press oil | Purified oil with a water solution(150 g / l with a concentration and 0.5% excess alkali compared to the oil weight) | |
|---|---|---|---|---|
| | | | Sodium hydroxide | Alkaline solution of sodium aluminum |
| Acid number | mg KON/g | 4,15 | 0,21 | 0,28 |
| Peroxide number | mmol/kg | 16,2 | 7,8 | 8,9 |
| Color in 35 yellow units | -red | 50,4 | 10,8 | 19,4 |
| | -blue | 2,6 | 0,1 | 0,3 |
| The output of refined oil | % | - | 89,8 | 92,7 |

Changes in quality indicators when refining soy oil under the influence of alkaline solutions

**Table 2.**

| Name of the Oil Indicator | Unit of measurement | Primary press oil | Purified oil with a water solution (150 g / l with a concentration and 0.5% excess alkali compared to the oil weight) | |
|---|---|---|---|---|
| | | | Sodium hydroxide | Alkaline solution of sodium aluminum |
| Acid number | mg KON/g | 7,22 | 0,25 | 0,30 |
| Peroxide number | mmol/kg | 20,2 | 9,6 | 11,4 |
| Color in 35 yellow units | -red | 70,6 | 12,0 | 25,0 |
| | -blue | 4,8 | 0,2 | 0,8 |
| Residual amount of hydrocarbons | %. $10^{-7}$ | 38 | 28,2 | 30,1 |
| 3,4 benzoapyren quantity | mkg/kg | 5,2 | 1,2 | 0,8 |
| Output of refined oil | % | - | 86,8 | 89,9 |

As can be seen from Table 2, the alkaline solutions studied during the refining of soybean oil show different activity in changing the performance of the purified oil.

The greatest effect on the reduction of the acid and peroxide numbers of the oil was shown by the alkaline solution of the sodium hydroxide, followed by the sodium aluminate salt. The color level of the oil was affected by an alkaline solution of sodium hydroxide and sodium aluminate salt. The increase in the yield of refined oil is seriously affected first by sodium hydroxide and then by an alkaline solution of the sodium aluminate salt. The use of an alkaline solution of sodium aluminate salt has made it possible to reduce the acid number of the product in the purification of oil in accordance with the requirements of the existing standard. The main indicators of soybean oil refining technology under the influence of alkaline solutions used are given in Table 3.

**Table 3.**

**Refining conditions and indicators of soybean oil**

| Alkali consumption | | Refined oil performance | | | |
|---|---|---|---|---|---|
| Thickness | Excess amount % | Acid number mg KON/gr | colour | | Oil output |
| | | | red | blue | |
| Using an aqueous solution of NaOH | | | | | |
| 200 | 150 | 0,32 | 27 | 3 | 87,1 |
| 200 | 150 | 0,29 | 24 | 2 | 85,7 |
| 200 | 150 | 0,26 | 21 | 1 | 84,3 |
| 200 | 150 | 0,22 | 18 | - | 82,9 |
| Using an aqueous solution (Na3AlO3) * Na2O * SiO2 | | | | | |
| 125 | 50 | 0,33 | 29 | 4 | 92,5 |
| 125 | 50 | 030 | 26 | 3 | 92,0 |
| 125 | 50 | 0,28 | 23 | 2 | 91,4 |
| 125 | 50 | 0,26 | 20 | 1 | 91,0 |

It can be concluded from Table 3 that the density and excess of sodium hydroxide and sodium aluminate saline solutions in the refining of soybean oil have led to an increase in the quality of the refined oil.

Thus, the use of new types of alkaline solutions in the refining of vegetable oils from non-conventional oilseeds allows to improve the technological processes of oil refining, resulting in higher economic efficiency of oil companies.

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