

## THE BLEACHING OF SUNFLOWER OIL

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In a series of experiments, four samples of raw sunflower oil and two samples of neutralized oil were subjected to bleaching by means of three adsorbent samples based on the acid-activated clay. The experiments were carried out in the carbon dioxide atmosphere at 70 and 90°C during 30 minutes. In order to monitor changes in the oxidation degree and percentage of coloured matter removed, absorbances of oil samples were measured at 232, 270 and 455 nm. The chosen oil samples had similar absorbances at 270 nm but differed significantly in colour intensity, free fatty acids content and in the starting degree of oxidation (Table 1).

TABLE 1. CHARACTERISTICS OF ORIGINAL SUNFLOWER OIL SAMPLES

SAMPLE	FFA (%)	A <sub>455</sub>	A <sub>232</sub>	A <sub>270</sub>	R	
I	0.96	0.51	15.4	0.40	38.5	FFA - Free fatty acids A <sub>455</sub> - Absorbance at 455 nm (1%, cuvette 1 cm)
II	1.96	0.73	7.2	0.40	18.8	
III	0.25	0.67	7.1	0.40	17.2	A <sub>232</sub> - Absorbance at 232 nm (1%, cuvette 1 cm)
IV	3.32	1.24	6.9	0.40	17.2	
V	0.91	0.43	12.7	0.70	18.1	A <sub>270</sub> - Absorbance at 270 nm (1%, cuvette 1 cm)
VI	0.1	0.80	7.5	0.50	15.0	

R - A<sub>232</sub>:A<sub>270</sub>

The specificity of action of different adsorbent in decolouration and decomposition of primary oxidation products is evident from the tretment of raw oil samples having a high degree of oxidation (Table III).

Table VI presents the results of bleaching treatment of an oil sample having a lower degree of oxidation and a very dark colour, and thus exhibiting a higher degradation of primary oxidation products and higher percentage of coloured matter removal.

TABLE III. RESULTS OF BLEACHING OF RAW SUNFLOWER OIL (SAMPLE I) AT 90°C WITH 0.5% ADSORBENT CONTENT

ACTIVATED CLAY	A <sub>455</sub>	A <sub>232</sub>	A <sub>270</sub>	R	COLOR REMOVED, %
x)	0.51	15.4	0.40	38.5	-
TF	0.23	13.0	2.40	5.4	54.9
L	0.35	15.4	0.40	38.5	31.3
TN	0.32	15.4	0.80	19.2	37.2

\* No adsorbent (starting oil)

TABLE VI. RESULTS OF BLEACHING OF RAW SUNFLOWER OIL (SAMPLE I) AT 90°C WITH 0.5% ADSORBENT CONTENT

ACTIVATED CLAY	A <sub>455</sub>	A <sub>232</sub>	A <sub>270</sub>	R	COLOUR REMOVED, %
x)	1.24	6.9	0.4	17.2	-
TF	0.42	2.3	1.0	2.3	66.1
L	0.62	4.2	0.5	8.4	60.0
TN	0.63	3.9	0.6	6.5	49.2

Several series of experiments using the oil samples characterized in Table I showed that the absorbent samples exhibiting a high catalytic activity in degradation of primary oxidation products were always effective decolourants; the adsorbents of lower catalytic activity were efficient only in decolourating of some of the oil samples.