# REPORT OF THE OIL CHARACTERISTICS COMMITTEE

This committee is at present collecting data on cottonseed oil, and in line with the policy of reporting results from time to time, the following contributions by two of the members are herewith given as a matter of information to those interested in analyses of present day oils.

### American Cottonseed Oils

These four samples are of laboratory refined oils from seed originating in the "delta" country along the Mississippi River just south of Pine Bluff, Arkansas. Sample No. 1 was received in February, 1937, samples No. 2 and 3 in April, 1937, and No. 4 in May, 1937. Pressing of the oil was carried on at the Pine Bluff Oil Mill. The analyses of these oils were reported by the laboratory of J. J. Vollertsen.

### Foreign Cottonseed Oils

The analyses of these oils were reported by the laboratory of W. G. McLeod.

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| Method | Sample 1 | Sample 2 | Sample 3 | Sample 4 |
|---|---|---|---|---|
| Specific Gravity (25°C/25°C)—AOCS | 0.9171 | 0.9169 | 0.9169 | 0.9165 |
| Specific Gravity (50°C/50°C)—AOCS | 0.9013 | 0.9011 | 0.9010 | 0.9007 |
| Index of Refraction (25°C)—AOCS | 1.46976 | 1.46978 | 1.46983 | 1.46966 |
| Index of Refraction (50°C)—AOCS | 1.46063 | 1.46073 | 1.46070 | 1.46075 |
| Color, Lovibond (5¼" *col*)—Y-NCPA | 35 | 35 | 35 | 35 |
| Color, Lovibond (5¼" col)—R-NCPA | 5.6 | 5.1 | 9.5 | 10.7 |
| Free Fatty Acids (%)—AOCS | 0.02 | 0.03 | 0.02 | 0.03 |
| Saponification Value—AOCS | 195.2 | 195.5 | 194.7 | 195.2 |
| Acetyl Value (Andre Cook)—AOCS | 9.85 | 10.90 | 10.90 | 9.15 |
| Unsaponifiable Matter—AOCS | 0.62 | 0.67 | 0.73 | 0.59 |
| Reichert Meissl Value—AOCS | 0.53 | 0.65 | 0.75 | 0.73 |
| Polenske Value—AOCS | 0.70 | 0.60 | 0.60 | 0.60 |
| Vis., Saybolt Universal (210°F) (Sec)—ASTM | 57 | 56 | 64 | 56 |
| Vis., Saybolt Universal (100°F) (Sec)—ASTM | 186 | 184 | 189 | 184 |
| Smoke Point (°F) AOCS | 445 | 440 | 440 | 440 |
| Flash Point (°F)—ASTM | 615 | 620 | 620 | 625 |
| Fire Point (°F)—ASTM | 685 | 675 | 675 | 685 |
| Titer of Fatty Acids (°C)—AOCS | 36.5 | 34.0 | 34.0 | 33.2 |
| Saponification Value of Fatty Acids—AOCS | 204.5 | 204.8 | 204.0 | 204.4 |
| Solid Fatty Acids (%) (Lead Salt-Ether)—AOCS | 26.8 | 25.6 | 26.5 | 26.5 |
| Liquid Fatty Acids (by difference) (%)—AOCS | 73.2 | 74.4 | 73.5 | 73.5 |
| Iodine Value (Wijs) of Oil—AOCS | 101.0 | 101.7 | 101.8 | 101.2 |
| Iodine Value (Wijs) of Mixed Fatty Acids—AOCS | 104.8 | 105.1 | 104.3 | 104.2 |
| Iodine Value (Wijs) of Solid Fatty Acids—AOCS | 3.5 | 3.3 | 3.5 | 3.7 |
| Thiocyanogen Value, of Oil—AOCS | 62.8 | 62.6 | 60.9 | 61.7 |
| Thiocyanogen Value of Mixed Fatty Acids—AOCS | 65.5 | 65.4 | 63.6 | 64.6 |
| Thiocyanogen Value of Solid Fatty Acids—AOCS | 3.6 | 4.8 | 3.9 | 3.9 |

**(Based on Thiocyanogen Value)**

| | Glycerides (%) | | | | Fatty Acids in Oil (%) | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Linoleic | 43.7 | 44.8 | 46.8 | 45.3 | 42.0 | 43.0 | 44.0 | 43.5 |
| Oleic | 28.4 | 27.1 | 23.0 | 25.6 | 27.3 | 26.3 | 22.2 | 24.7 |
| Saturated | 27.28 | 27.43 | 29.47 | 28.51 | 26.40 | 26.40 | 29.50 | 27.50 |
| Unsaponifiable Matter | 0.62 | 0.67 | 0.73 | 0.59 | ..... | ..... | ..... | ..... |

**FOREIGN COTTONSEED OILS**

| Crude Oil — Method | Sample A | Sample B |
|---|---|---|
| F. F. Acids (oleic) | 1.0% | 3.4% |
| Refining Lye Used—Baume | 6.2% of 14° | 9.5% of 18° |
| Refining Loss—AOCS | 3.8% | 8.0% |
| Color of Refined Oil | 35 Y—8.4 R | 35 Y—9.5 R |
| Color of Bleached Oil (6% earth) | 20 Y—3.5 R | 20 Y—4.6 R |
| **Refined Oil** | | |
| Specific Gravity @ 25/25°C | 0.9163 | 0.9172 |
| Index of Refraction—@ 40° C | 1.4636 | 1.4642 |
| Index of Refraction—Butyro | 56.6 | 57.4 |
| Free Fatty Acids (oleic) | 0.028% | 0.028% |
| Saponification Value | 189.4 | 192.0 |
| Acetyl Value—Andre-Cook | 12.2 | 11.4 |
| Unsaponifiable Matter—FAC | 0.83% | 0.77% |
| Unsaponifiable Matter—Kerr-Sorber | 0.64% | 0.62% |
| Iodine Value of Unsaponifiable (R-K) | 184 | 169 |
| Hehner Value—AOAC | 86.0 | 87.7 |
| Soluble Acids (butyric)—AOAC | 3.1% | 2.5% |
| Reichert-Meissl No.—AOCS | 0.9 | 2.0 |
| Polenske No.—AOCS | 0.2 | 0.4 |
| Smoke Point—AOCS | 465°F. | 375°F. |
| Flash Point—Cleveland Open Cup | 595 | 605 |
| Fire Point—Cleveland Open Cup | 635 | 655 |
| Titer of Fatty Acids—AOCS | 37.0°C. | 34.6°C. |
| Sapon. No. of Fatty Acids—AOCS | 195 | 197 |
| Acid Value of Fatty Acids—AOCS | 192.5 | 192.5 |
| Ether Insoluble Bromides of F. Acids | Trace | Trace |
| Solid Fatty Acids (Jamieson) | 22.9% | 21.4% |
| Liquid Fatty Acids by difference | 77.1 | 78.6 |
| Iodine Value (Wijs) of Oil | 101.8 | 105.5 |
| Iodine Value (Wijs) of Fatty Acids | 101 | 105 |
| Thiocyanogen Value of Oil (Jamieson) | 61.8 | 63.7 |
| Thiocyanogen Value of Fatty Acids | 59.0 | 78.6 |
| Thiocyanogen Value of Solid Fatty Acids | 0.64 | 0.69 |

| Calculated Composition: | Glycerides | Fatty Acids in Oil | Glycerides | Fatty Acids |
|---|---|---|---|---|
| Linoleic | 46.2 | 44.2 | 48.2 | 46.2 |
| Oleic | 25.4 | 24.2 | 25.4 | 23.3 |
| Saturated | 27.57 | 26.47 | 25.6 | 25.4 |
| Unsaponifiable Matter | 0.83 | ..... | 0.77 | .... |

Sample A—Oil pressed in Liverpool from Cottonseed from Sudan, Africa.
Sample B—Oil pressed in Liverpool from Cottonseed from Brazil.