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Hydrogenated Cottonseed Oil

DEFINITION

Hydrogenated Cottonseed Oil is the product obtained by refining and hydrogenating oil obtained from seeds of cultivated plants of various varieties of *Gossypium hirsutum* L. or of other species of *Gossypium* (Fam. Malvaceae). The product consists mainly of triglycerides of palmitic and stearic acids.

IDENTIFICATION

- **A.** It meets the requirements in *Specific Tests for Fats and Fixed Oils, Fatty Acid Composition (401)*.
- **B.** It meets the requirements in *Specific Tests for Melting Range or Temperature, Class II (741)*.

IMPURITIES

• LIMIT OF NICKEL

Solution A: Immediately before use, dilute 10 mL of nickel standard solution TS with water to 500 mL. This solution contains the equivalent of 0.2 µg/g of nickel.

Sample solution: Weigh 5.0 g of Hydrogenated Cottonseed Oil into a previously tared platinum or silica crucible. Cautiously heat, and introduce into the substance a wick formed from twisted ashless filter paper. Ignite the wick. When the substance ignites, stop heating. After combustion, ignite in a muffle furnace at 600°. Continue the incineration until white ash is obtained. After cooling, transfer the residue, with the aid of two 2-mL portions of diluted hydrochloric acid, to a 25-mL volumetric flask, add 0.3 mL of nitric acid, and dilute with water to volume.

Standard solutions: Into three identical 10-mL volumetric flasks, introduce respectively 1.0, 2.0, and 4.0 mL of Solution A. To each flask add a 2.0-mL portion of the *Sample solution*, and dilute with water to volume.

Instrumental conditions

(See *Atomic Absorption Spectroscopy (852)*.)

Mode: Atomic absorption spectrophotometry, equipped with a graphite furnace

Analytical wavelength: 232.0 nm

Lamp: Nickel hollow-cathode

Analysis: Concomitantly determine the absorbances of the *Sample solution* and each of the *Standard solutions* at least three times each, and record the average of the steady readings. Plot the absorbances of the *Sample solution* and the *Standard solutions* versus the added quantity of nickel. Extrapolate the line joining the points on the graph until it meets the concentration axis. The distance between this point and the intersection of the axes represents the concentration of nickel in the *Sample solution*.

Acceptance criteria: NMT 1 µg/g

• ALKALINE IMPURITIES

Sample solution: Dissolve by gentle heating 2.0 g of Hydrogenated Cottonseed Oil in a mixture of 1.5 mL of alcohol and 3.0 mL of toluene.

Analysis: To the *Sample solution* add 0.05 mL of bromophenol blue TS, and titrate with 0.01 N hydrochloric acid to a yellow endpoint.

Acceptance criteria: NMT 0.4 mL of 0.01 N hydrochloric acid is required.

SPECIFIC TESTS

- **FATS AND FIXED OILS, Fatty Acid Composition (401):** Hydrogenated Cottonseed Oil exhibits the composition profile of fatty acids in *Table 1*, as determined in the chapter.

Table 1

Carbon-Chain Length	No. of Double Bonds	Percentage (%)
<14	0	≤0.2
14	0	≤1.0
16	0	19–26
18	0	68–80
20	0	≤1.0
22	0	≤1.0
24	0	≤0.5
18	1	≤4.0
18	2	≤1.0

- [MELTING RANGE OR TEMPERATURE, Class II \(741\)](#): 57°–70°

- [FATS AND FIXED OILS, Acid Value \(Free Fatty Acids\) \(401\)](#).

Sample: 10 g

Analysis: Dissolve the **Sample** in 50 mL of a hot mixture of neutralized alcohol and toluene (1:1), add 0.5 mL of phenolphthalein TS, and titrate with 0.1 N potassium hydroxide VS to produce a permanent, faint pink color.

Acceptance criteria: NMT 0.5

- [FATS AND FIXED OILS, Peroxide Value \(401\)](#): NMT 5.0

- [FATS AND FIXED OILS, Unsaponifiable Matter \(401\)](#): NMT 1.0%

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers. No storage requirements are specified.

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
HYDROGENATED COTTONSEED OIL	Documentary Standards Support	CE2020 Complex Excipients

Chromatographic Database Information: [Chromatographic Database](#)

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