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# Lanolin

**DEFINITION**  
Lanolin is the purified, wax-like substance from the wool of sheep, *Ovis aries* L. (Fam. Bovidae), that has been cleaned, decolorized, and deodorized. It contains NMT 0.25% of water. It may contain NMT 0.02% of a suitable antioxidant.

**IMPURITIES**

- [RESIDUE ON IGNITION \(281\)](#); NMT 0.1%
- [CHLORIDE AND SULFATE, Chloride\(221\)](#).

**Sample solution:** Boil 20 mL of alcohol with 1.0 g of Lanolin under a reflux condenser. Cool, add 1 mL of 2 N nitric acid, and filter. To the filtrate add 5 drops of a solution of 20 mg/mL of silver nitrate in alcohol.

**Blank:** Boil 20 mL of alcohol under a reflux condenser. Cool, add 1 mL of 2 N nitric acid, and filter. To the filtrate add 5 drops of a solution of 20 mg/mL of silver nitrate in alcohol. Add 0.50 mL of 0.020 N hydrochloric acid.

**Acceptance criteria:** 0.035%; any turbidity produced by the *Sample solution* does not exceed that produced by the *Blank*.

• **FOREIGN SUBSTANCES**

Use pesticide-free grade reagents and solvents throughout this test. [NOTE—Reference materials of pesticides for use in the *Standard solution* may be obtained from any commercial source.<sup>1</sup>]

**Standard stock solutions:** Prepare stock solutions for each reference pesticide containing 100 mg/L in hexane.

[NOTE—Concentrated stock solutions may be stored in glass-stoppered containers in a dark refrigerator at 2°–5° for up to 1 year. Most pesticides may be dissolved directly in hexane; however, the hexachlorocyclohexane isomers and the DDT group of pesticides may require initial dissolution in the minimum volume of acetone followed by dilution with hexane to the specified concentration.]

**Standard solution:** Dilute volumes of the *Standard stock solutions* quantitatively with hexane, and combine to obtain a composite *Standard solution* having the concentrations indicated in [Table 1](#). Store the composite *Standard solution* in a glass-stoppered glass container in the dark at 2°–5°, and replace it every 2 months. [NOTE—Two or more separate composite *Standard solutions*, each preferably containing NMT 8 reference pesticides, may be prepared if needed. Reference pesticides should be selected for composite *Standard solutions* on the basis that relative retention times (see [Table 1](#)) differ sufficiently so that peaks in chromatograms will not be expected to overlap, and they should be selected and combined appropriately for the chromatographic system and detector used.]

Table 1

| Reference Pesticide <sup>a</sup>               | Standard Solution<br>(Concentration in µg/mL) |                                   | Relative Retention Times<br>(Relative to 1.0 for Chlorpyrifos) |           |
|------------------------------------------------|-----------------------------------------------|-----------------------------------|----------------------------------------------------------------|-----------|
|                                                | Electron-<br>Capture Detector                 | Flame-<br>Photometric<br>Detector | System I                                                       | System II |
| Tetrachloronitrobenzene<br>(TCBN)              | 0.05                                          | —                                 | 0.29                                                           | 0.24      |
| alpha-<br>Hexachlorocyclohexane<br>(alpha BHC) | 0.05                                          | —                                 | 0.40                                                           | 0.35      |
| beta-<br>Hexachlorocyclohexane<br>(beta BHC)   | 0.30                                          | —                                 | 0.43                                                           | 0.56      |

| Reference Pesticide <sup>a</sup>                                     | Standard Solution<br>(Concentration in µg/mL) |                            | Relative Retention Times<br>(Relative to 1.0 for Chlorpyrifos) |           |
|----------------------------------------------------------------------|-----------------------------------------------|----------------------------|----------------------------------------------------------------|-----------|
|                                                                      | Electron-Capture Detector                     | Flame-Photometric Detector | System I                                                       | System II |
| Hexachlorobenzene (HCB)                                              | 0.05                                          | —                          | 0.45                                                           | 0.33      |
| gamma-Hexachlorocyclohexane (lindane)                                | 0.05                                          | —                          | 0.48                                                           | 0.41      |
| Propetamphos                                                         | —                                             | 0.30                       | 0.48                                                           | 0.42      |
| Diazinon                                                             | —                                             | 0.20                       | 0.52                                                           | 0.40      |
| Dichlofenthion                                                       | 0.10                                          | 0.20                       | 0.67                                                           | 0.56      |
| Ronnel                                                               | 0.30                                          | 0.40                       | 0.81                                                           | 0.66      |
| Heptachlor                                                           | 0.10                                          | —                          | 0.83                                                           | 0.60      |
| Malathion                                                            | —                                             | 0.40                       | 0.91                                                           | 1.05      |
| Chlorpyrifos                                                         | 0.30                                          | 0.30                       | 1.00                                                           | 1.00      |
| Aldrin                                                               | 0.20                                          | —                          | 1.05                                                           | 0.76      |
| Pirimiphos ethyl                                                     | —                                             | 0.40                       | 1.14                                                           | 1.14      |
| Chlorfenvinphos Z                                                    | 0.40                                          | 0.40                       | 1.17                                                           | 1.40      |
| Heptachlor epoxide                                                   | 0.20                                          | —                          | 1.29                                                           | 1.17      |
| Chlorfenvinphos E                                                    | 0.40                                          | 0.50                       | 1.30                                                           | 1.51      |
| Bromophos ethyl                                                      | 0.40                                          | 0.50                       | 1.51                                                           | 1.45      |
| 1,1'-Dichloro-2-(2-chlorophenyl)-2-(4-chlorophenyl)ethene (o,pp-DDE) | 0.30                                          | —                          | 1.55                                                           | 1.51      |
| 1,1'-Dichloro-2-(4-chlorophenyl)-2-(4-chlorophenyl)ethene (p,pp-DDE) | 0.30                                          | —                          | 1.88                                                           | 1.86      |
| Stirophos                                                            | 0.60                                          | 0.80                       | 1.58                                                           | 1.97      |
| alpha-Endosulfan                                                     | 0.40                                          | —                          | 1.63                                                           | 1.47      |
| 1,1'-Dichloro-2-(2-chlorophenyl)-2-(4-chlorophenyl)ethane (o,pp-TDE) | 0.40                                          | —                          | 1.90                                                           | 2.19      |