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Myristyl Alcohol



$C_{14}H_{30}O$ 214.39
n-Tetradecan-1-ol;
1-Tetradecanol;
1-Hydroxytetradecane;
1-Tetradecyl alcohol CAS RN®: 112-72-1.

DEFINITION

Myristyl Alcohol contains NLT 90.0% and NMT 102.0% of myristyl alcohol ($C_{14}H_{30}O$), the remainder consisting chiefly of related alcohols. It is obtained from sources of vegetable, animal, or synthetic origin.

IDENTIFICATION

• **A. CHROMATOGRAPHIC IDENTITY**

Analysis: Proceed as directed in the Assay.
Acceptance criteria: The retention time of the major peak of the *Sample solution*, excluding the solvent and internal standard peaks, corresponds to the myristyl alcohol peak of the *Standard solution*.

ASSAY

• **PROCEDURE**

Internal standard solution: 1 mg/mL of 1-pentadecanol (internal standard) in ethanol
System suitability solution: Prepare 1 mg/mL of [USP Cetyl Alcohol RS](#), 1 mg/mL of [USP Stearyl Alcohol RS](#), and 1 mg/mL of [USP Oleyl Alcohol RS](#) in *Internal standard solution*, and heat the solution in a sealed container in a 50° water bath until all fatty alcohols are dissolved. Allow the solution to cool to room temperature, and mix well.
Standard solution: 1.0 mg/mL of [USP Myristyl Alcohol RS](#) in *Internal standard solution*
Sample solution: 1.0 mg/mL of Myristyl Alcohol in *Internal standard solution*
Chromatographic system
(See [Chromatography \(621\)](#), [System Suitability](#).)
Mode: GC
Detector: Flame ionization
Column: 0.25-mm × 30-m fused-silica capillary column, coated with a 0.25-µm layer of phase G7
Temperatures
Injection port: 270°
Detector: 280°
Column: See [Table 1](#).

Table 1

Initial Temperature (°)	Temperature Ramp (°/min)	Final Temperature (°)	Hold Time at Final Temperature (min)
60	20	180	—
180	10	220	5

Carrier gas: Hydrogen
Flow rate: 2.0 mL/min, constant flow mode
Injection volume: 1 µL
Injection type: Split injection; split ratio is 100:1
Liner: Single taper, low pressure drop liner with deactivated wool
Run time: 15 min

System suitability

Samples: *System suitability solution* and *Standard solution*
[NOTE—See [Table 2](#) for the relative retention times.]

Table 2

Component	Relative Retention Time
Myristyl alcohol	0.92
1-Pentadecanol (internal standard)	1.00
Cetyl alcohol	1.08
Stearyl alcohol	1.25
Oleyl alcohol	1.27

Suitability requirements

Resolution: NLT 30 between the cetyl alcohol and stearyl alcohol peaks; NLT 2.0 between the stearyl alcohol and oleyl alcohol peaks, *System suitability solution*
Tailing factor: 0.8–1.8 for the myristyl alcohol and 1-pentadecanol peaks, *Standard solution*
Relative standard deviation: NMT 1%, using the area ratio of myristyl alcohol to 1-pentadecanol, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*
Calculate the percentage of myristyl alcohol (C₁₄H₃₀O) in the portion of Myristyl Alcohol taken:

Result = $(R_U/R_S) \times (C_S/C_U) \times 100$

R_U = peak response ratio of myristyl alcohol to the internal standard (peak response of myristyl alcohol/peak response of the internal standard) from the *Sample solution*
 R_S = peak response ratio of myristyl alcohol to the internal standard (peak response of myristyl alcohol/peak response of the internal standard) from the *Standard solution*
 C_S = concentration of [USP Myristyl Alcohol RS](#) in the *Standard solution* (mg/mL)
 C_U = concentration of Myristyl Alcohol in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–102.0%

IMPURITIES

- [RESIDUE ON IGNITION \(281\)](#): NMT 0.1%, determined on 2 g
- **LIMIT OF RELATED FATTY ALCOHOLS**

Solution A: 1 mg/mL of 1-pentadecanol in ethanol
Resolution solution: Prepare 1 mg/mL of [USP Lauryl Alcohol RS](#), 1 mg/mL of [USP Myristyl Alcohol RS](#), 1 mg/mL of [USP Cetyl Alcohol RS](#), 1 mg/mL of [USP Stearyl Alcohol RS](#), and 1 mg/mL of [USP Oleyl Alcohol RS](#) in *Solution A*. Heat the solution in a sealed container in a 50° water bath until all fatty alcohols are dissolved. Allow the solution to cool to room temperature, and mix well. Dilute the solution with ethanol to obtain a solution containing 0.05 mg/mL each of [USP Lauryl Alcohol RS](#), [USP Myristyl Alcohol RS](#), [USP Cetyl Alcohol RS](#), [USP Stearyl Alcohol RS](#), and [USP Oleyl Alcohol RS](#).