

PRODUCT DATA SHEET

Tetracosanoic acid

Catalog number: 1037

Common names: Lignoceric acid; C24:0 Fatty acid

Source: synthetic

Solubility: chloroform, ethyl ether

CAS number: 557-59-5

Molecular Formula: C₂₄H₄₈O₂

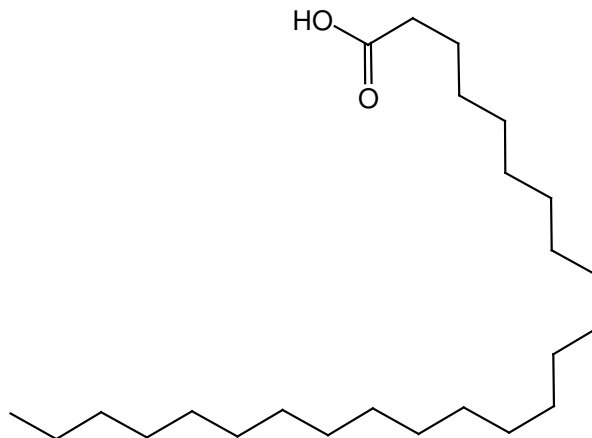
Molecular Weight: 369

Storage: room temperature

Purity: TLC: 99%, GC >99%

TLC System: hexane/ethyl ether/acetic acid
(60:40:2)

Appearance: solid



Application Notes:

This high purity fatty acid is ideal as a standard and for biological studies. Lignoceric acid (C24:0) and nervonic acid (C24:1) can make up as much as 60% of the fatty acids of certain lipid fractions in the white matter, gray matter, and myelin of the human brain.¹ Sphingomyelin also contains significant amounts of both lignoceric and nervonic acids in other mammalian sources.² Lignoceric acid is oxidized mainly in the peroxisomes in contrast to some of the other fatty acids, such as palmitic acid, which are oxidized in the mitochondria.³ In peroxisomal disorders, such as Zellweger cerebro-hepato-renal syndrome and X-linked adrenoleukodystrophy, there is an accumulation of lignoceric acid along with other saturated very long-chain fatty acids due to peroxisomal dysfunctions. Lignoceric acid (as well as other saturated very long-chain fatty acids) promotes the growth of cotton fiber cell elongation (possibly by activating ethylene biosynthesis) and increases sphingolipid biosynthesis.⁴

Selected References:

1. J. O'Brien and E. Sampson "Fatty acid and fatty aldehyde composition of the major brain lipids in normal human gray matter, white matter, and myelin" *Journal of Lipid Research*, vol. 6 pp. 545-551, 1965
2. B. Ramstedt et al. "Analysis of natural and synthetic sphingomyelins using high-performance thin-layer chromatography" *Eur J Biochem.*, vol. 266 pp. 997-1002, 1999
3. I. Singh et al. "Lignoceric acid is oxidized in the peroxisome: implications for the Zellweger cerebro-hepato-renal syndrome and adrenoleukodystrophy" *Proc Natl Acad Sci U S A.*, vol. 81 pp. 4203-4207, 1984
4. Y. Qin et al. "Saturated Very-Long-Chain Fatty Acids Promote Cotton Fiber and Arabidopsis Cell Elongation by Activating Ethylene Biosynthesis" *The Plant Cell*, vol. 19 pp. 3692-3704, 2007

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