

PRODUCT DATA SHEET

Methyl 11-methyldodecanoate

Catalog number: 1656

Synonyms: *iso*-Tridecanoic methyl ester;
iso-C13:0 methyl ester

Source: synthetic

Solubility: hexane, ethyl ether, methylene chloride

CAS number: 5129-57-7

Molecular Formula: C₁₄H₂₈O₂

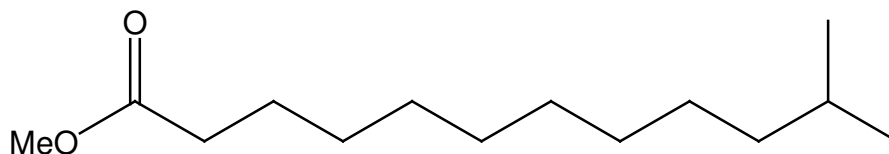
Molecular Weight: 228

Storage: -20°C

Purity: GC: >98%

TLC System: hexane/ethyl ether (80:20)

Appearance: liquid



Application Notes:

11-methyldodecanoic acid is found in some plants and animals and in ruminant milk where it is produced by rumen bacteria.¹ In bacteria the *iso*-fatty acid content and composition can often be used as a taxonomic marker because *iso*-fatty acids are often found in bacteria but not commonly in other microorganisms.^{2,3} Some bacteria have *iso*- but not *anteiso*-fatty acids while others have *anteiso*- but not *iso*-fatty acids. *Iso*-fatty acids are found in small amounts in marine organisms and ruminants, mainly due to the food chain but also due to some *de novo* synthesis. *Iso*-fatty acids with a total even number of carbons are more common than a total odd number. Some waxy materials such as lanolin, as well as secretions near animal eyes, contain an unusually high amount of *iso*-fatty acids being employed for their lubricating effect. Branched chain fatty acids are critical for the regulation of fluidity in membranes and in membrane transport for many types of bacteria due to their having a significantly lower transition temperature than straight chain fatty acids. Some bacteria handle stress (such as heat and toxicity) by changing the ratio of *anteisofatty* acids in the cell membrane. *Iso*-fatty acids have been found to be activators for various enzymes and systems and are used as protein modifiers. Although *iso*-even chain fatty acids are commonly derived from isobutyryl-CoA some bacteria derive all *iso*-even chain fatty acids via *alpha*-oxidation of *iso*-odd chain fatty acids.⁴ While *iso*-fatty acids are not usually found in plant oils the waxy surface of leaves can contain significant amounts of these fatty acids.

Selected References:

1. M. Vaisanen et al. "Differentiation of dairy strains of the Bacillus cereus group by phage typing, minimum growth temperature, and fatty acid analysis" *J Appl Bacteriol.*, Vol. 70(4) pp. 315-324, 1991
2. T. Kaneda "Iso- and Anteiso-Fatty Acids in Bacteria: Biosynthesis, Function, and Taxonomic Significance" *American Society for Microbiology*, Vol. 55(2) pp. 288-302, 1991
3. N. Jensen and M. Gross "Fast Atom Bombardment and Tandem Mass Spectrometry for Determining Iso- and Anteiso-Fatty Acids" *Lipids*, Vol. 21(5) pp. 362-365, 1986
4. H. Bode et al. "Biosynthesis of Iso-Fatty Acids in Myxobacteria: Iso-Even Fatty Acids Are Derived by alpha-Oxidation from Iso-Odd Fatty Acids" *J. Am. Chem. Soc.*, Vol. 127(2) pp 532-533, 2005

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