

## PRODUCT DATA SHEET

### 13-Methyltetradecanoic acid

**Catalog number:** 1605

**Common Name:** iso-Pentadecanoic acid; iso  
C15:0 Fatty acid

**Source:** synthetic

**Solubility:** chloroform, ethyl ether, ethanol

**CAS number:** 2485-71-4

**Molecular Formula:** C<sub>15</sub>H<sub>30</sub>O<sub>2</sub>

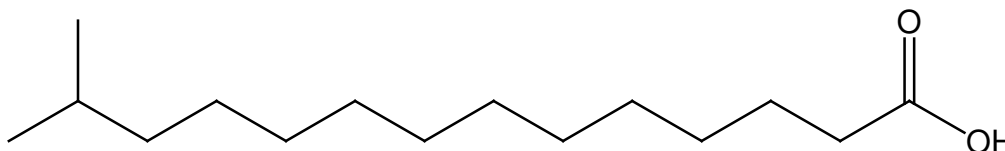
**Molecular Weight:** 242

**Storage:** -20°C

**Purity:** GC >98%

**TLC System:** hexane/ethyl ether/acetic acid,  
(80:20:1 by vol.)

**Appearance:** solid



### **Application Notes:**

In bacteria the iso-fatty acid<sup>1</sup> content and composition can often be used as a taxonomic marker<sup>2</sup> because iso-fatty acids are often found in bacteria but not commonly in other microorganisms. 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 anteiso/iso-fatty 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.<sup>3</sup> Although iso-fatty acids are not usually found in plant oils the waxy surface of leaves can contain significant amounts of these fatty acids. 13-Methyltetradecanoic acid is a major fatty acid in the bacteria *Shewanella livingstonensis* Ac10, as well as in other bacteria, and can be used to characterize them by their fatty acid content.<sup>4</sup> This fatty acid is also present in ruminant milk.

### **Selected References:**

1. 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
2. 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
3. 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
4. J. Kawamoto et al. "Eicosapentaenoic Acid Plays a Beneficial Role in Membrane Organization and Cell Division of a Cold-Adapted Bacterium, *Shewanella livingstonensis* Ac10" *Journal of Bacteriology*, vol. 191 pp. 632-640, 2009

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