

## PRODUCT DATA SHEET

### Methyl undecanoate

**Catalog number:** 1166

**Common names:** C11:0 Methyl ester

**Source:** synthetic

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

**CAS number:** 1731-86-8

**Molecular Formula:** C<sub>12</sub>H<sub>24</sub>O<sub>2</sub>

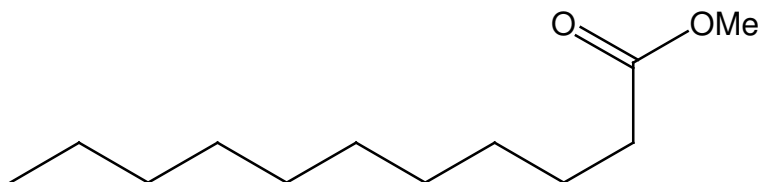
**Molecular Weight:** 200

**Storage:** room temperature

**Purity:** TLC: 99%, GC: 99%

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

**Appearance:** liquid



### **Application Notes:**

This high purity fatty acid methyl ester is ideal as a standard and for biological studies. Odd numbered fatty acids occur in small amounts in mammals but are found in much larger amounts in bacteria and in some plants and lower animals. Due to difficulties in their identification the properties and functions of odd numbered fatty acids have not been fully studied, but with better analytical techniques and high purity standards they are now gaining more prevalence in research.<sup>1</sup> Odd numbered fatty acids are found in small amounts acylated to various sphingolipids where they have unique properties and functions.<sup>2</sup> Microbial fatty acid profiles, which often contain significant amounts of odd numbered fatty acids, are unique from one species to another and can therefore be used in the determination of bacterial identity. Fatty acids are known to have antifungal properties and undecanoic acid has recently been studied in its role in inhibiting the fungus *Trichophyton rubrum*.<sup>3</sup> Sphingolipids are normally acylated with long-chain fatty acids and are critical in many biological functions. When acylated with shorter fatty acids these sphingolipids can more easily cross the cell membrane barrier. Undecanoic acid is a saturated fatty acid and saturated fatty acids have been found to cause moderate risk of coronary heart disease as compared with polyunsaturated fatty acids and they significantly lower the total cholesterol/high density lipoprotein-cholesterol ratio as compared with carbohydrates.<sup>4</sup>

### **Selected References:**

1. T. Rezanka and K. Sigler "Odd-numbered very-long-chain fatty acids from the microbial, animal and plant kingdoms" *Progress in Lipid Research*, vol. 48 pp. 206-238, 2009
2. A. Hajra and N. Radin "Biosynthesis of the cerebroside odd-numbered fatty acids" *Journal of Lipid Research*, vol. 3 pp. 327-332, 1962
3. N. Peres et al. "In vitro susceptibility to antimycotic drug undecanoic acid, a medium-chain fatty acid, is nutrient-dependent in the dermatophyte *Trichophyton rubrum*" *World J Microbiol Biotechnol.* Vol. 27 pp. 1719-1723, 2011
4. R. Micha and D. Mozaffarian "Saturated Fat and Cardiometabolic Risk Factors, Coronary Heart Disease, Stroke, and Diabetes: a Fresh Look at the Evidence" *Lipids*, vol. 45 pp. 893-905, 2010

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