

PRODUCT DATA SHEET

Methyl sterculate

Catalog No: 1236

Common Name: Methyl 9,10-methyleneoctadec-9-enoate;
Methyl 2-octyl-1-cyclopropene-1-octanoate

Source: Natural, plant

Solubility: chloroform, hexane, ethyl ether, methanol

CAS No: 3220-60-8

Molecular Formula: C₂₀H₃₆O₂

Molecular Weight: 309

Storage: -20°C

Purity: TLC, GC: >98%;

TLC System: hexane/ethyl acetate 95:5

Appearance: liquid



Application notes:

Sterculic acid is a monounsaturated fatty acid containing a cyclopropene ring, which gives it specific and unusual physiological properties. The major sources of sterculic acid are the seed oils of various plants, including *Sterculia foetida*, cotton, and *Bombax munguba*. Cyclopropenoids, such as sterculic acid, inhibit the enzyme $\Delta 9$ -desaturase, preventing the conversion of stearic acid to oleic acid, potentially causing significant health problems for organisms which consume them. Cyclopropenoid fatty acids have been reported to have several deleterious effects on mammals, such as carcinogenicity and acute and chronic toxicity.^{1,2} Because of the harmful effects of cyclopropenoids, cottonseed oil (a major world-wide edible oil which contains around 1% of these fatty acids) is required to be heat treated and hydrogenated before consumption. *Sterculia foetida* seeds have been used in traditional Chinese medicine as an anti-parasitic drug and recent research has found that sterculic acid and its methyl ester analog have a significant inhibitory effect towards the wide-spread parasite *Toxoplasma gondii*.³ Oil from *Sterculia foetida* has also been shown to have significant insecticide, and possible anti-fungal properties, making it a potentially useful alternative to synthetic, and more environmentally toxic, compounds.^{4,5}

Selected References:

1. X. Bao et al., Characterization of cyclopropane fatty-acid synthase from *Sterculia foetida*, *J Biol Chem.* vol. 278(15) pp. 12846-12853, 2003
2. E. Fehling et al., Preparation of malvalic and sterculic acid methyl esters from *Bombax munguba* and *Sterculia foetida* seed oils, *JAOCS*, vol. 75(12), pp. 1757-1760, 1998
3. P. Hao et al., Sterculic Acid and Its Analogues Are Potent Inhibitors of *Toxoplasma gondii*, *Korean J Parasitol.* vol. 54(2) pp. 139-145, 2016
4. P. Rani and P. Rajasekharreddy, Toxic and antifeedant activities of *Sterculia Foetida* (L.) seed crude extract against *Spodoptera litura* (F.) and *Achaea Janata* (L.) *Journal of Biopesticides*, vol. 2(2) pp. 161-164 2009
5. K. Schmid and G. Patterson Effects of cyclopropenoid fatty acids on fungal growth and lipid composition, *Lipids*, vol. 23(3) pp. 248-252, 1988

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