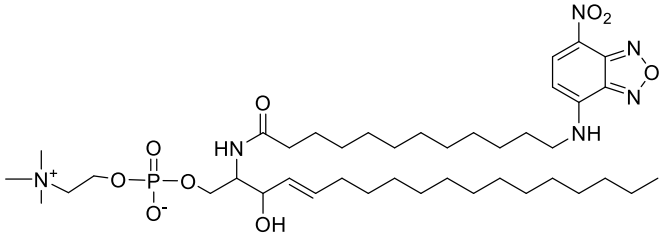
# PRODUCT DATA SHEET

MATREYA LLC
Lipids and Biochemicals
A Cayman Chemical Company

## N-Dodecanoyl-NBD-sphingosylphosphorylcholine (mixture of D-*erythro* and L-*threo* isomers)

**Catalog number:** 1619; 1619-001
**Common names:** N-C12:0-NBD-Sphingomyelin; N-C12:0-NBD-Sphingosylphosphorylcholine; N-C12:0-NBD-SM
**Source:** semisynthetic, bovine buttermilk
**Solubility:** chloroform/methanol, 2:1; methanol
**CAS number:** 254117-01-6

**Molecular Formula:** $C_{41}H_{73}N_6O_9P$
**Molecular Weight:** 825
**Storage:** -20°C
**Purity:** TLC >98%; identity confirmed by MS
**TLC System:** chloroform/methanol/DI water (60:30:5)
**Appearance:** orange solid




### Application Notes:

N-Dodecanoyl-NBD-sphingosylphosphorylcholine is a semisynthetic sphingomyelin containing the 7-(4-nitrobenzo-2-oxa-1, 3-diazole) (NBD) fluorescent group. NBD has been shown to have only a small influence on lipid adsorption into cells and cellular membranes in many applications. This fluorescent analog of natural sphingomyelin is comparable to C12:0-sphingomyelin in some biological functions.[1] Sphingomyelin is found in mammalian cell membranes, especially in the membranes of the myelin sheath. It is the most abundant sphingolipid in mammals and is thought to be found mostly in the exoplasmic leaflet of the membrane although there is also evidence of a sphingomyelin pool in the inner leaflet of the membrane. It is involved in signal transduction and apoptosis. An improper ratio of sphingomyelin to ceramide has been shown to be a factor in Niemann-Pick disease and neonatal respiratory distress syndrome.[2] However, the ratio of sphingomyelin to ceramide is different for different cell types.[3] Sphingomyelin is an important amphiphilic component when plasma lipoprotein pools expand in response to large lipid loads or metabolic abnormalities.[4] In contrast to ceramides N-hexanoyl-sphingosylphosphorylcholine does not initiate vesicle formation in cells. N-hexanoyl-sphingosylphosphorylcholine has been used to enhance the uptake of anti-tumor drugs by cancer cells, thereby increasing the cytotoxicity towards those cancer cells.[5]

### Selected References:


1. A. Loidl et al. "High-precision fluorescence assay for sphingomyelinase activity of isolated enzymes and cell lysates" *Journal of Lipid Research*, vol. 43 pp. 815-823, *2002*
2. C. St Clair et al. "The probability of neonatal respiratory distress syndrome as a function of gestational age and lecithin/sphingomyelin ratio" *Am J Perinatol*., Vol. 25(8) pp. 473-480, *2008*,
3. J. Kilkus et al. "Differential regulation of sphingomyelin synthesis and catabolism in oligodendrocytes and neurons" *J Neurochem*. Vol. 106(4) pp. 1745-1757, *2008*
4. N. Duan RD. "Absorption and lipoprotein transport of sphingomyelin" *J Lipid Res*., Vol. 47(1) pp. 154-171, *2006*
5. R. Veldman et al. "*N*-hexanoyl-sphingomyelin potentiates *in vitro* doxorubicin cytotoxicity by enhancing its cellular influx" *Nature*, vol. 90 pp. 917-925, *2004*