

## PRODUCT DATA SHEET

### Phosphatidylinositol, plant, wheat germ (Na<sup>+</sup> salt)

**Catalog No:** 1048

**Common Name:** PI (Na<sup>+</sup> salt)

**Source:** natural, plant

**Solubility:** chloroform, ethyl ether

**CAS No:** 383907-36-6

**Molecular Formula:** C<sub>45</sub>H<sub>78</sub>O<sub>13</sub>P • Na

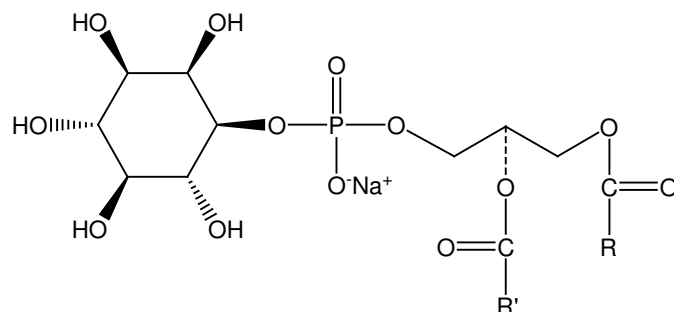
**Molecular Weight:** 858 + Na (linoleoyl)

**Storage:** -20°C

**Purity:** TLC > 98%; identity confirmed by MS

**TLC System:** chloroform/ methanol/ DI water/  
ammonium hydroxide (65:25:3:3  
by Vol.)

**Appearance:** liquid



### **Application Notes:**

The metabolism of inositol lipids is involved in the signal transduction of many hormones, neurotransmitters and growth factors.<sup>1,2,3</sup> In the classical pathway, phosphatidylinositol-specific phospholipase C (PI-PLC) hydrolyzes phosphatidyl 4,5-bisphosphate (PIP<sub>2</sub>) to yield 1,2-diacylglycerol (DAG) and inositol 1,4,5-triphosphate (IP<sub>3</sub>). The role of IP<sub>3</sub> and DAG as second messengers is well recognized. In a second, more recently discovered pathway, the activation of phosphoinositide 3-kinase results in the formation of three novel phosphatidyl (PI) lipids phosphorylated at the D3 positions of the inositol ring: PI-3-P, PI-3,4-P<sub>2</sub>, and PI-3,4,5-P<sub>3</sub>. These D3 lipids are not known substrates for any of the phospholipase C enzymes and function as second messengers. PI 3-kinase activity is correlated with many cellular processes including the regulation of cell growth, oncogenic transformation, chemotaxis and receptor down-regulation. A recent paper on the effect of PI-3,4-P<sub>2</sub> on the *Akt* proto-oncogene product also contains protocols for applying PIP's to cell cultures.<sup>4</sup> Matreya's synthetic phosphatidylinositols and inositol phosphates are excellent tools for investigating these second messengers, understanding the enzyme mechanisms involved in phosphoinositide metabolism and designing therapeutic pharmacological agents.

### **Selected References:**

1. Bruce A. Fenderson, E. M. Eddy, Sen-Itiroh Hakomori "Glycoconjugate expression during embryogenesis and its biological significance" *BioEssays* Vol. 12 pp. 173, 1990
2. P.W. Majerus, "Inositol phosphate biochemistry" *Annual Review of Biochemistry* Vol. 61 pp. 225-250, 1992
3. Ao-Lin Hsu, et al. "Novel Function of Phosphoinositide 3-Kinase in T Cell Ca<sup>2+</sup> Signaling: A Phosphatidylinositol 3,4,5-Trisphosphate-Mediated Ca<sup>2+</sup> Entry Mechanism" *Journal of Biological Chemistry* May, Vol. 275 pp. 16242-16250, 2000
4. H. Shimamura, et al. "The PI3-kinase-Akt pathway promotes mesangial cell survival and inhibits apoptosis in vitro via NF-kappa B and Bad" *Journal of American Society of Nephrology* Vol. 14 pp. 1427-1434, 2003

This product is to be used for research only. It is not intended for drug or diagnostic use, human consumption or to be used in food or food additives. Matreya assumes no liability for any use of this product by the end user. We believe the information, offered in good faith, is accurate.