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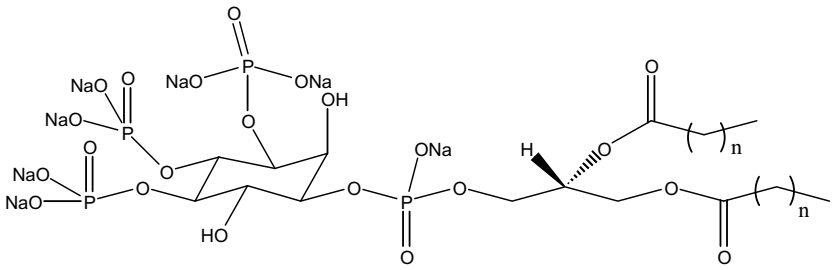
Product Name:

D-*myo*-Phosphatidylinositol 3,4,5-trisphosphate (PtdIns(3,4,5)P_3)

For research use only



n	Catalog Number	MW (g/mol), Na^+ salt	Chemical Formula	Solubility
6	P-3908	980.42	$C_{25}H_{43}Na_7O_{22}P_4$	H_2O, >1 mg/mL
14	P-3916	1204.84	$C_{41}H_{75}Na_7O_{22}P_4$	H_2O, <1 mg/mL 1:2:0.8 $CHCl_3$:MeOH:H_2O, 0.1 mg/mL

STORAGE: Phosphatidylinositol polyphosphates ($PtdInsP_n$s) and analogs are stable for at least one year when stored as a solid, protected from moisture, at -20 °C. Reconstitute with water or neutral pH, buffered salt solutions, i.e. PBS, TBS, etc. Plastic containers may be used for the storage of short-chain $PtdInsP_n$s; however, longer-chain $PtdInsP_n$s should be stored in glass containers to prevent material loss due to absorption to the vessel surface. Storage in basic buffers (pH > 9) will result in slow hydrolysis of the ester chains, and may cause phosphate or acyl migration to occur. Storage in acidic buffers (pH < 4) may cause decomposition or phosphate migration. After reconstitution, solutions of $PtdInsP_n$s should be flash frozen in liquid nitrogen and stored at -20 °C between uses. $PtdInsP_n$s are stable for at least three months when handled in this way. Repeated freeze/thaw cycles do not affect $PtdInsP_n$s. Do not store, reconstituted $PtdInsP_n$s, at 4°C for more than 2-3 days.

FIELD OF INTEREST: $PtdInsP_n$s compounds are employed as substrates for kinases, phosphatases and binding proteins as described in many publications. Depending on the application, the lyophilized powders may be dissolved or suspended in water, buffers, or mixed solvents such as $CHCl_3$-MeOH and others employed for preparing mixed phospholipid liposomes.

HAZARDOUS PROPERTIES AND CAUTIONS: No hazardous or toxic properties are known for this substance. $PtdInsP_n$s is not listed as a hazardous waste or as a Toxic Chemical subject to release reporting under the Emergency Planning and Community Right-to-Know Act. For solutions containing methanol or other solvents, see MSDS for Phosphoinositides in Solution available on request. $PtdInsP_n$s is not listed on the Chemical Inventory of the Toxic Substance Control Act, and is manufactured and shipped only in small quantities, intended for research and development in a laboratory utilizing prudent procedures for handling chemicals of unknown toxicity, under the supervision of persons technically qualified to evaluate potential risks and authorized to enforce appropriate health and safety measures. As with all research chemicals, precautions should be taken to avoid unnecessary exposures or risks.

WARRANTY AND DISCLAIMER: Echelon warrants the product conforms to the specifications stated herein. In the event of nonconformity, Echelon will replace products or refund purchase price, at its sole option, and Echelon shall not be responsible for any other loss or damage, whether known or foreseeable to Echelon. No other warranties apply, express or implied, including but not limited to warranty of fitness for any purpose or implied warranty of merchantability. Purchaser is solely responsible for all consequences of its use of the product and Echelon assumes no responsibility therefore, including success of purchaser's research and development, or health or safety of any uses of the product.

Technical questions:

Phosphoinositide Reagents:

Solubility:

How do I bring PIPs up in solution?

Long chain phosphoinositides, including our di-C_{16} fatty acid products whose product numbers end in 16, are quite insoluble in aqueous solutions and may require vortex mixing, brief water-bath sonication, heating and/or addtion of some organic solvent for complete dissolution. The diC_{16} reagents are soluble in 1:2:0.8 CHCl3:MeOH:H2O, <1 mg/ml

Our diC_8 products, whose product numbers end in 08, are soluble in water at 1mg/ml.

Our diC_4 products, whose product numbers end in 04, are soluble in water at 1mg/ml.

Storage:

Phosphatidylinositol polyphosphates (PtdInsPns) and analogs are stable for at least one year when stored as a solid, protected from moisture, at -20 °C. Reconstitute with water or neutral pH, buffered salt solutions, i.e. PBS, TBS, etc. Plastic containers may be used for the storage of short-chain PtdInsPns; however, longer-chain PtdInsPns should be stored in glass containers to prevent material loss due to absorption to the vessel surface. Storage in basic buffers (pH > 9) will result in slow hydrolysis of the ester chains, and may cause phosphate or acyl migration to occur. Storage in acidic buffers (pH < 4) may cause decomposition or phosphate migration. After reconstitution, solutions of PtdInsPns should be flash frozen in liquid nitrogen and stored at -20 °C between uses. PtdInsPns are stable for at least three months when handled in this way. Repeated freeze/thaw cycles do not affect PtdInsPns. Do not store, reconstituted PtdInsPns, at 4°C for more than 2-3 days.

Question: Do you know the physical status of your di-C8 phosphoinositides in solution? I.e. does it form aggregates in buffer solutions?
Answer: At concentrations below 5 mM, short chain phosphoinositides are likely monodisperse in solution. The quotation below from a paper by Campbell et al. suggests that the critical micelle concentration (CMC) for lipids with phosphorylated inositol headgroups would be above 3 mM.

Campbell, R. B., Liu, F., and Ross, A. H., Allosteric activation of PTEN phosphatase by phosphatidylinositol 4,5-bisphosphate, J Biol Chem, 278, 33617 (2003).

“Phosphatidylinositols and Inositol Phosphates—All phosphatidylinositols were purchased from Echelon
Research Laboratories (Salt Lake City, UT). Unless noted otherwise, the synthetic lipids used in these experiments have di-C_8, saturated fatty acid chains. Measurements of the critical micelle concentration (CMC) are not available in the literature for C8-PIPs and would be cost prohibitive to determine. However, the CMCs for these multiply charged PIPs can be estimated by comparison with the CMC for C8-PI, which is 60 μM (Rebecchi, et al.). Addition of phosphates to the inositol ring would increase head group size and charge and, thereby, increase the CMC (Rosen). For example, the CMC of di-C_8-phosphatidylserine is 2.28 mM (Kleinschmidt and Tamm). Because the PIP concentrations in these experiments are much less than the predicted CMCs, these PIPs must be monodispersed and do not form micelles or membranes. This prediction is confirmed by the lack of turbidity observed for all of the PIP solutions used in these experiments.”

Rebecchi, M. J., Eberhardt, R., Delaney, T., Ali, S., and Bittman, Hydrolysis of short acyl chain inositol lipids by phospholipase C-delta 1 R. J. Biol. Chem. 268, 1735–1741 (1993)

Rosen, M. J. (1984) Structure-Performance Relationships in Surfactants, American Cancer Society Symposium Series 23, ACS, Washington, D. C.

Kleinschmidt, J. H., and Tamm, L. K. (2002) Biophys. J. 83, 994–1003