



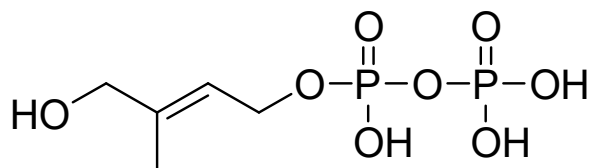
Echelon Biosciences Inc.  
675 Arapeen Drive, Suite 302  
Salt Lake City, UT 84108  
Telephone 866-588-0455  
Fax 801-588-0497  
echelon@echelon-inc.com  
www.echelon-inc.com

## Technical Data Sheet

*For research use only*

### Product Name: 1-Hydroxy-2-methyl-2-buten-4-yl 4-diphosphate (HDMAPP)

Product Number: I-M055



Provided as	Chemical Formula	MW (g/mol)	Solubility
Ammonium salt	C <sub>5</sub> H <sub>21</sub> N <sub>3</sub> O <sub>8</sub> P <sub>2</sub>	313.18	>1 mg/ml (water)

**PACKAGING:** 1-Hydroxy-2-methyl-2-buten-4-yl 4-diphosphate is provided in sealed vials as a solid residue.

**SPECIFICATIONS AND STORAGE RECOMMENDATIONS:** Purity not less than 95% (by weight for solids and as percent of stated concentration for solutions) when shipped. Organic phosphates vary in stability and shelf life. For optimum shelf life, store below -20°C.

**FIELD OF INTEREST:** 1-Hydroxy-2-methyl-2-buten-4-yl 4-diphosphate (HDMAPP) is an intermediate of the nonmevalonate pathway for isoprenoid biosynthesis recently discovered in bacteria and plant chloroplasts. HDMAPP is the product of IspG (GcpE) and the substrate for IspH (LytB) and is the most potent V $\gamma$ V $\delta$  T-cell activator identified. HDMAPP was prepared via chemical synthesis.

**REFERENCES:** 1) deBarros, A., M. Chaves-Ferreira, et al. (2011). "CD70-CD27 interactions provide survival and proliferative signals that regulate T cell receptor-driven activation of human  $\gamma\delta$  peripheral blood lymphocytes." European Journal of Immunology 41(1): 195. 2) Spencer, C. T., G. Abate, et al. (2008). "Only a Subset of Phosphoantigen-Responsive  $\gamma\delta$  T Cells Mediate Protective Tuberculosis Immunity." The Journal of Immunology 181(7): 4471-4484. 3) Moens, E., M. Brouwer, et al. (2011). "IL-23R and TCR signaling drives the generation of neonatal V $\gamma$ 9V $\delta$ 2 T cells expressing high levels of cytotoxic mediators and producing IFN-gamma and IL-17." J Leukoc Biol 89(5): 743-52.

**Hazardous Properties and Cautions:** The toxicological and pharmacological properties of this compound are not fully known. For further information see the MSDS on request. 1-Hydroxy-2-methyl-2-buten-4-yl 4-diphosphate (HDMAPP) 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.