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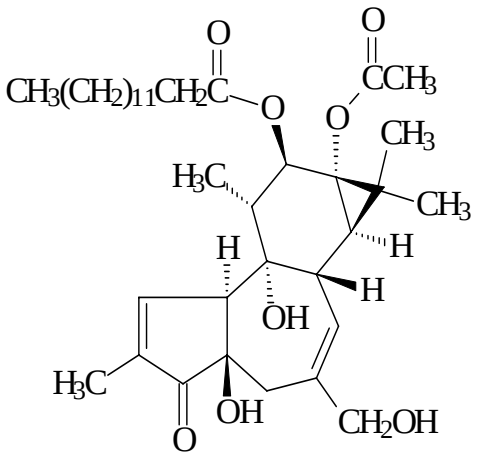
# ProductInformation

**PHORBOL 12-MYRISTATE 13-ACETATE**
**Sigma Prod. No. P 8139**

**CAS NUMBER:** 16561-29-8

**SYNONYMS:** Factor A1 (Croton Oil), 12-O-Tetradecanoylphorbol-13-Acetate, PMA, TPA



**PHYSICAL PROPERTIES:**

Appearance: Clear colorless (invisible) film or white foam - (Per the manufacturer) The smaller package sizes have a thinner film which may bead up during the drying process, making it look like droplets on the sides of the vials near the bottom.
Molecular formula: $C_{36}H_{56}O_8$
Formula weight: 616.8 (anhydrous)
Melting Point: 72 °C[1]
$E^{mM}$(232 nm) = 5.4 (ethanol)
$E^{mM}$(333 nm) = 0.073 (ethanol)
Specific Rotation: +49° where c = 1% in dioxane at 24 °C[3]

**STORAGE / STABILITY AS SUPPLIED:**

PMA should be stored in the freezer protected from light. Sigma has found that material that had been stored for two years was still greater than 99% by TLC.

**SOLUBILITY / SOLUTION STABILITY:**

PMA is soluble in acetone, DMSO, ethyl acetate, ethanol and methylene chloride, but is practically insoluble in water. The concentration of PMA in a saturated PMA-PBS solution has been reported to be 2.3 mg PMA per liter of PBS (i.e. 3.7 μM).[4] To prepare aqueous solutions of PMA, it is best to start out with a concentrated solution of the compound in DMSO (20 mM) and dilute a very small aliquot of this solution rapidly with water or buffer. The compound may also be dissolved in a water-soluble detergent such as Cremophor EL at 37 °C and then diluted further with an aqueous medium.

PMA solutions are sensitive to acid and alkaline conditions.[5] PMA solutions in methylene chloride and ethyl acetate (at concentrations of 0.2 mM) or DMSO (20 mM) do not show any detectable autoxidation if stored in diffuse daylight for about 14 days at room temperature.

**SOLUBILITY / SOLUTION STABILITY:** (continued)

Acetone solutions should not be stored at room temperature. Stock solutions of PMA in acetone, methylene chloride, ethyl acetate or DMSO may be used up to about 3 months if stored at 4 °C in the dark. DMSO solutions stored at –20 °C in the dark displayed essentially no degradation of PMA for at least 6 months.[6]

**APPLICATIONS:**

Phorbol 12-myristate 13-acetate, commonly referred to as PMA or TPA is a polyfunctional diterpene phorbol ester that has been widely used as a tumor promotor in cancer research.[7,8,9] Other selected references include use in tissue culture,[10,11,12] as an activator of Protein Kinase C[13] and as a differentiator of human leukemia cells[14] and a general review of phorbol esters[5].

**REFERENCES:**

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