

#12808

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1 mg

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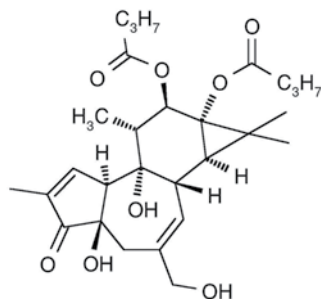
Orders: 877-616-CELL (2355)
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rev. 05/20/14

For Research Use Only. Not For Use In Diagnostic Procedures.

Background: Phorbol 12, 13-Dibutyrate (PDBu) is a phorbol ester and a potent activator of protein kinase C (PKC). Frequently used in cancer research, PDBu is widely characterized to promote tumors in a variety of tissue types (1,2). PDBu treatment of cells can lead to activation of downstream PKC targets such as p44/42 MAPK and MARCKS (3-5). Although less potent than TPA, research has shown PDBu elicits less nonspecific binding (6,7) and is less hydrophobic allowing for easy wash out from cells in tissue culture (8).

Molecular Formula: C₂₈H₄₀O₈

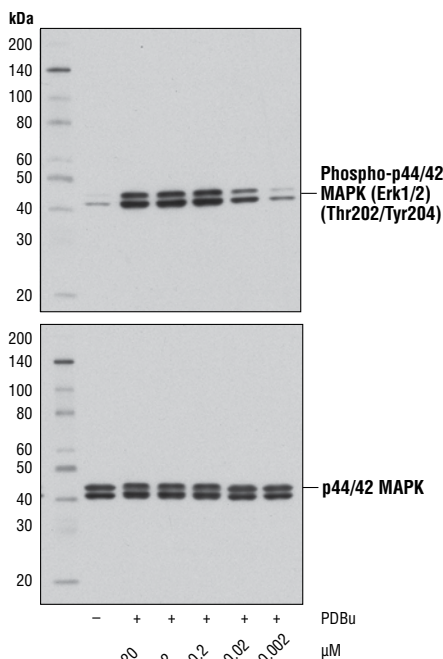


Molecular Weight: 504.61 g/mol

Solubility: Soluble in DMSO or ethanol.

Purity: >99%

Directions for Use: PDBu is supplied as a lyophilized powder. For a 2 mM stock, reconstitute the 1 mg in 990.9 μ l DMSO. Working concentrations and length of treatment can vary depending on the desired effect, but it is typically used at 20-2000 nM for 15-30 min.



Western blot analysis of extracts from HeLa cells serum-starved overnight, and untreated (-) or treated with PDBu (15 min; +) at the indicated concentrations, using Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP[®] Rabbit mAb #4370 (upper) or p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb #4695 (lower).

Storage: Store lyophilized or in solution at -20°C, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

Background References:

- (1) Blumberg, P.M. et al. (1983) *Ann N Y Acad Sci* 407, 303-15.
- (2) Driedger, P.E. and Blumberg, P.M. (1980) *Proc Natl Acad Sci USA* 77, 567-71.
- (3) Caunt, C.J. and McArdle, C.A. (2010) *J Cell Sci* 123, 4310-20.
- (4) Bapat, S. et al. (2001) *FEBS Lett* 499, 21-6.
- (5) Tanabe, A. et al. (2012) *J Cell Physiol* 227, 618-29.
- (6) Shoyab, M. and Todaro, G.J. (1980) *Nature* 288, 451-5.
- (7) Chida, K. and Kuroki, T. (1983) *Cancer Res* 43, 3638-42.
- (8) Dunphy, W.G. et al. (1981) *Cancer Res* 41, 2640-7.

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Applications: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide **Species Cross-Reactivity:** H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebrafish B—bovine Dg—dog Pg—pig Sc—S. cerevisiae Ce—C. elegans Hr—Horse All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology



SAFETY DATA SHEET (SDS): According to the OSHA Hazard Communication Standard 29 CFR 1910.1200
Issuing Date: 2014-03-19 Revision Date: 2014-03-19 Version: 1

SECTION 1. Identification

Product identifier

Product No. 12808
Product name PDBu (Phorbol 12,13-Dibutyrate)
Other means of identification 12808S

Recommended use of the chemical and restrictions on use

Identified uses This product is intended for research purposes only.
Uses advised against This product is not intended for use in diagnostic procedures or therapeutics.
This product is not intended for use in humans or animals.

Manufacturer, importer, supplier

Manufacturer address Cell Signaling Technology, Inc.
3 Trask Lane
Danvers, MA 01923
TEL: +1 978 867 2300
FAX: +1 978 867 2400
Website www.cellsignal.com
Email address support@cellsignal.com
Company phone number 978-867-2300
Emergency telephone number In case of emergency call CHEMTREC 1-800-424-9300

SECTION 2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Carcinogenicity	Category 2
Specific target organ toxicity - single exposure (STOT SE)	Category 3

GHS Label elements, including precautionary statements



Signal Word

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Protection of First-aiders Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

No information available.

Explosion Data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Ensure adequate ventilation.
Other information No information available.

Environmental precautions

Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.
Methods for cleaning up Use personal protective equipment. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Take up mechanically and collect in suitable container for disposal. Avoid dust formation. Clean contaminated surface thoroughly.

SECTION 7. Handling and storage

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions Keep containers tightly closed in a dry, cool and well-ventilated place.
Packaging material No information available.
Incompatible products None known based on information supplied.

SECTION 8. Exposure controls/personal protection

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Warning

Hazard statement(s)

Suspected of causing cancer
Causes serious eye irritation
Causes skin irritation
May cause respiratory irritation

Precautionary Statement(s)

Obtain special instructions before use
Wear protective gloves/protective clothing/eye protection/face protection
IF exposed or concerned: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Supplementary Hazard Information

Hazards not otherwise classified (HNOC) None.
Unknown Acute Toxicity 100% of the mixture consists of ingredient(s) of unknown acute toxicity.

SECTION 3. Composition/information on ingredients

Formula C₃₁H₅₀O₈
Molecular Weight 504.61
Chemical nature Monoconstituent substance
Common name PDBu
Synonyms Phorbol 12,13-dibutyrate; PDBu; Phorbol ester; P(Bu)₂

Chemical Name	CAS No.	Weight %
Butanoic acid, 1,1a,1b,4,4a,5,7a,7b,8,9-decahydro-4a,7b-dihydrox- y-3-(hydroxymethyl)-1,1,6,8-tetramethyl-5-oxo-9ah- cyclopropa(3,4)benz(1,2-e)azulene-9,9a-diyl ester, (1aR-(1a-alpha,1b-beta,4a-beta,7a-alpha,7b-alpha, 8-alpha,9-beta,9a-alpha))-	37558-16-0	100

SECTION 4. First-aid measures

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids.
Consult a physician.
Skin contact Wash skin with soap and water.
Inhalation Move to fresh air.
Ingestion Clean mouth with water and afterwards drink plenty of water.

Most important symptoms and effects, both acute and delayed

No information or data specific to the product on this toxicological (health) effect is available.

Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

Advice for emergency responders

General advice For further assistance, contact your local Poison Control Center.

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Control parameters

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Appropriate engineering controls

Showers, eyewash stations, and ventilation systems.

Individual protection measures, such as personal protective equipment

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

Eye/face protection Safety glasses with side-shields.
Skin and body protection Wear protective gloves/clothing.
Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hygiene measures Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state Solid
Appearance Powder
Odor No information available
Color White
Odor Threshold No information available
pH No information available
Melting point/freezing point No information available
Initial boiling point and boiling range No information available
Flash point No information available
Evaporation rate No information available
Flammability (solid, gas) No information available
Upper flammability limit No information available
Lower flammability limit No information available
Vapor pressure No information available
Vapor density No information available
Relative density No information available
Solubility Insoluble
Solubility in other solvents Dimethyl sulfoxide (DMSO), Ethanol (EtOH).
Partition coefficient: n-octanol/water No information available
Autoignition temperature No information available
Decomposition temperature No information available
Explosive properties No information available
Oxidizing properties No information available
Molecular Weight 504.61
VOC content No information available
Viscosity No information available
Density No information available

SECTION 10. Stability and reactivity

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Reactivity

No information available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Hazardous reactions	None under normal processing.
Hazardous polymerization	None under normal processing.

Conditions to Avoid

No information available.

Incompatible Materials

None known based on information supplied.

Hazardous Decomposition Products

None known based on information supplied.

SECTION 11. Toxicological information

Information on likely routes of exposure

Inhalation	Inhalation of dust in high concentration may cause irritation of respiratory system.
Eye contact	Expected to be an irritant based on components.
Skin contact	Expected to be an irritant based on components.
Ingestion	There is no data available for this product.

Information on toxicological effects

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Unknown Acute Toxicity 100% of the mixture consists of ingredient(s) of unknown acute toxicity.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Symptoms	No information available.
Skin corrosion/irritation	Irritating to skin.
Serious eye damage/eye irritation	Irritating to eyes.
Corrosivity	No information available.
Sensitization	No information available.
Mutagenic effects	No information available.
Carcinogenicity	No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.
Reproductive toxicity	No information available.
STOT - single exposure	Respiratory system.
STOT - repeated exposure	No information available
Target Organ Effects	Skin, Eyes, Respiratory system.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated under applicable state right-to-know regulations

U.S. EPA Label Information

This product does not contain any substances regulated as pesticides.

SECTION 16. Other information

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Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Neurological effects	No information available.
Aspiration Hazard	No information available.

SECTION 12. Ecological information

Ecotoxicity

100% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Persistence and degradability	No information available.
Bioaccumulation	No information available.
Mobility	No information available

Other adverse effects

No information available.

SECTION 13. Disposal considerations

Waste Disposal Methods

Dispose of in accordance with all applicable national environmental laws and regulations.

Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way.

SECTOIN 14. Transport information

This material is not subject to regulation as a hazardous material for shipping.

SECTION 15. Regulatory information

North American Inventory Listing

Component	TSCA	DSL	NDSL
Butanoic acid, 1,1a,1b,4,4a,5,7a,7b,8,9-decahydro-4a,7b-dihydroxy-3-(hydroxymethyl)-1,1,6,8-tetramethyl-5-oxo-9ah-cyclopropal[3,4]benz(1,2-e)azulene-9,9a-diyl ester (1aR-(1a-alpha,1b-beta,4a-beta,7a-alpha,7b-alpha,8-alpha,9-beta,9a-alpha))-37558-16-0 (100)	Not Listed	Not Listed	Not Listed

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.