

Store at
4°C

#88334

CellSimple™ Akt and MAPK Activation Antibody Assay Kit

1 Kit (50 assays)



Support: +1-978-867-2388 (U.S.)
www.cellsignal.com/support

Orders: 877-616-2355 (U.S.)
orders@cellsignal.com

Rev. 12/07/16

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

Products Included	Product #	Quantity	Storage Temp.
Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (197G2) Rabbit mAb (PE Conjugate)	14095	1 x 25 µl	4°C
Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate)	4071	1 x 25 µl	4°C
16% Formaldehyde, Methanol-Free	12606	2 x 10 ml	RT
Phosphate Buffered Saline (PBS-20X)	9808	1 x 25 ml	RT

Species Cross-Reactivity: H, M

Description: The CellSimple™ Akt and MAPK Activation Antibody Assay Kit is designed for use with the CellSimple™ Cell Analyzer. The kit contains Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (197G2) Rabbit mAb (PE Conjugate) #14095 and Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate) #4071. The kit allows for the quick and easy measurement of relative phosphorylation levels of ERK 1/2 MAPK and Akt under given experimental conditions.

Specificity/Sensitivity: Antibodies provided in the CellSimple™ Akt and MAPK Activation Antibody Assay Kit detect endogenous levels of their respective target. Additionally the Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (197G2) Rabbit mAb (PE Conjugate) does not cross-react with the corresponding phosphorylated residues of either JNK/SAPK or p38 MAP kinase.

Background: The MAP Kinase (MAPK) and the PI-3 Kinase/Akt pathways are two of the most well characterized and widely studied signaling modules which transmit signals emanating from the extracellular environment to alter cell behavior. They are involved in a broad range of cellular processes such as cell proliferation, survival, differentiation, and motility. The ERK (from the MAPK pathway) and Akt protein kinases are two quintessential components serving as integration hubs in their respective pathways. ERK protein kinase is activated by dual phosphorylation on Thr202 and Tyr204 from the the dual specificity kinases MEK1 and MEK2. The Akt protein kinase is activated by phosphorylation on Ser473 and Thr308 from the TORC2 complex and PDK1, respectively. The relative levels of these phosphorylations are reliable proxies of activation levels of these kinases. The knowledge about the levels of activation of these kinases is instructive in a broad range of experimental settings making these two molecular events some of the most popular and sought after assay endpoints.

CellSimple™ Cell Analysis System: The CellSimple™ Cell Analyzer is a benchtop instrument that utilizes a disposable thin-film cassette and a combination of a 488 nm laser, two photomultiplier tubes (525/45 nm and 561 nm LP filters), Coulter Principle-based cell measurements, and on-board software to provide easy-to-run applications and data analysis. Data acquisition occurs within approximately 10 seconds per test. The instrument relies on disposable cassettes for sample handling, which alleviates the need for flow cell cleaning and fluidics maintenance and the instrument is small enough to be portable between the lab bench and the hood. Applications include quantitative assessments of cell viability, apoptosis, other labeled antibody markers and single and multiplexed bead-based assays for protein and cellular analysis.

Storage: The conjugated antibodies in this kit are supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2 mg/ml BSA. Store at 4°C. Do not aliquot the antibodies. Protect from light. Do not freeze. The remaining components of the kit should be stored at the recommended temperature upon receipt. All components in this kit are stable for at least 12 months when stored at the recommended temperature and left unused.

Background References:

- (1) De Luca, A. et al. (2012) *Expert Opin Ther Targets* 16 Suppl 2, S17-27.
- (2) Chappell, W.H. et al. (2011) *Oncotarget* 2, 135-64.
- (3) McCubrey, J.A. et al. (2008) *Leukemia* 22, 708-22.
- (4) Meier, F. et al. (2005) *Front Biosci* 10, 2986-3001.

The Alexa Fluor® dye antibody conjugates in this product are sold under license from Molecular Probes, Inc., for research use only, except for use in combination with DNA microarrays. The Alexa Fluor® dyes (except for Alexa Fluor® 430 dye) are covered by pending and issued patents.

Alexa Fluor is a registered trademark of Life Technologies Corporation.

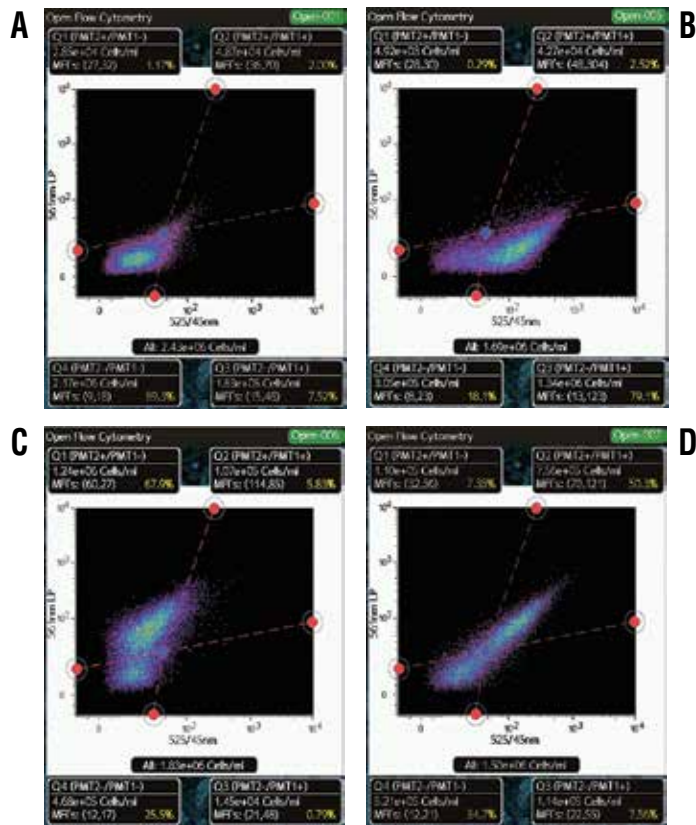
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Applications: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide Species Cross-Reactivity: H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken 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.



CellSimple™ cell-based analysis of Jurkat cells using the CellSimple™ Akt and MAPK Activation Antibody Assay Kit. Cells were subjected to the following treatments: A) LY294002 #9901 (10 μ M), Wortmannin #9951 (1 μ M), and U0126 #9903 (2 μ M) for 2.5 hr; B) U0126 (2 μ M, 2.5 hr); C) LY294002 (10 μ M) and Wortmannin (1 μ M, 2.5 hr) followed by TPA #4174 (1 μ M, 15 min); D) No addition of any kinase inhibitors followed by treatment of cells with TPA (1 μ M, 15 min). Fixed and permeabilized cells were stained and analyzed using the Open Flow Cytometry application. Mean fluorescence intensity (MFI) of Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate) in the green channel (525/45 nm filter; x-axis) and Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (197G2) Rabbit mAb (PE Conjugate) in the red channel (561 nm/LP filter; y-axis) is shown in each dot plot. Cell concentration, MFIs, and percentages are displayed in the boxes adjacent to each quadrant. Instrument screen shots are shown.

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www.cellsignal.com

Please note your screen may look slightly different from the screen shots on the data sheet due to variations between software versions.

Immunostaining Protocol for CellSimple™ Antibody-based Kits

- A. Instrumentation:** These kits were specially designed for use with the CellSimple™ Cell Analyzer. However, they may also be used with a flow cytometer or plate reader capable of providing excitation between 480 nm and 490 nm and detecting fluorescent emission between 520 nm and 590 nm.
- B. Kit components:**
- Antibody pair (Kit specific)
 - 16% Formaldehyde (Methanol-free)
- NOTE: The screw cap allows for the entire vial contents to be used at once. To extend the product's shelf-life, small volumes should be extracted by piercing the silicone top with a needle and syringe. Store protected from light and use within one month after opening.
- Phosphate Buffered Saline (PBS-20X)
- C. Additional reagents needed, but not supplied.**
- 90% methanol
 - Bovine Serum Albumin #9998 or equivalent
 - Reverse osmosis/deionized (RO/DI) water or equivalent
- D. Reagent preparation**
- 1. 1X PBS:** To prepare 1 L 1X PBS add 25 ml PBS-20X to 475 ml RO/DI water, mix.
 - 2. Incubation Buffer:** Dissolve 0.5 g Bovine Serum Albumin in 100 ml 1X PBS. Store at 4°C.
- E. Fixation**
1. Collect cells by centrifugation and aspirate supernatant. For adherent cells, remove cells from the plate or flask by trypsinization followed by trypsin neutralization with medium that contains 10% fetal bovine serum.
 2. Resuspend cells in 0.5 - 1 ml 1X PBS to 0.5×10^6 - 5×10^6 cells/ml by gently pipetting up and down. Add 16% Formaldehyde to obtain a final concentration of 4% and vortex gently (for example 335 μ l of 16% Formaldehyde added to 1 ml of cell suspension).
 3. Fix for 10 min at 37°C.
 4. Chill tubes on ice for 1 min.
 5. Spin down the cells at 400 x g for 5 min in a chilled microcentrifuge.
 6. Carefully remove the supernatant containing formaldehyde into a hazardous waste receptacle.
- F. Permeabilization**
1. Permeabilize cells by slowly adding 1 - 1.5 ml of ice-cold 90% methanol. Pipette up and down several times to ensure uniform cell suspension.
 2. Incubate 30 min on ice.
 3. Proceed with immunostaining or store cells at -20°C in 90% methanol.
- G. Immunostaining**
1. Aliquot $0.5 - 1 \times 10^6$ cells into each assay tube.
 2. Wash the cells twice in 1 ml incubation buffer by centrifugation at 400 x g for 5 min.
 3. Dilute each of the two fluorochrome-conjugated antibodies 1:50 in incubation buffer. Prepare enough diluted antibody mix to resuspend each of your test samples in 25 μ l. For example, for 3 test samples add 1.5 μ l of antibody mix to 75 μ l of incubation buffer. Note: the antibodies are mixed together to allow a simultaneous detection in both the green and the red channels.
 4. Add 25 μ l of the diluted antibody mix to each test sample and gently pipette up and down a few times to ensure even cell suspension.
 5. Incubate for 1 hr at room temperature with occasional gentle mixing.
 6. Wash once by centrifugation using incubation buffer.
 7. Resuspend cells in 0.1 - 0.2 ml PBS and analyze 75 μ l on CellSimple™ Cell Analyzer using the Open Flow Cytometry application and using both Green (525/45 nm) and Red (561 nm LP) channels. For more information on how to use the Open Flow Cytometry application and detailed instructions on how to operate the CellSimple™ Cell Analyzer please refer to the CellSimple user guide.

SAFETY DATA SHEET (SDS): According to the OSHA Hazard Communication Standard 29 CFR 1910.1200
 Issuing Date: 2014-04-02 Revision Date: 2014-05-07 Version: 1

SECTION 1. Identification

Product identifier

Product No. 12606
 Product name 16% Formaldehyde, Methanol-Free
 UN number UN3334
 Other means of identification 12606S, 12606P, 12606P2

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
 www.cellsignal.com

Website

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 substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Acute inhalation toxicity	Category 3
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Specific target organ toxicity - single exposure (STOT SE)	Category 3

GHS Label elements, including precautionary statements



Signal Word

Danger

Hazard statement(s)

Harmful if swallowed
 Harmful in contact with skin
 Toxic if inhaled
 Causes skin irritation
 Causes serious eye irritation
 May cause an allergic skin reaction
 May cause genetic defects
 May cause cancer
 May cause respiratory irritation

Precautionary Statement(s)

Obtain special instructions before use
 Wear protective gloves/protective clothing/eye protection/face protection
 Call a POISON CENTER or doctor/physician if you feel unwell
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 Store in a well-ventilated place. Keep container tightly closed

Supplementary Hazard Information

Hazards not otherwise classified (HNOC) None

SECTION 3. Composition/information on ingredients

Formula

CH₂O

Chemical Name	CAS No.	Weight %
formaldehyde (non-stabilised)	50-00-0	10-30

SECTION 4. First-aid measures

Eye contact

Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids.

Skin contact

Wash skin with soap and water.

Inhalation

Move to fresh air.

Ingestion

Rinse mouth.

Most important symptoms and effects, both acute and delayed

Low-dose acute exposure can result in headache, rhinitis, and dyspnea; higher doses may cause severe mucous membrane irritation, burning, and laceration, and lower respiratory effects such as bronchitis, pulmonary edema, or pneumonia. Sensitive individuals may experience asthma and dermatitis, even at very low doses. Ocular exposure to formaldehyde vapors produces irritation and laceration. Depending on the concentration, formaldehyde solutions may cause transient discomfort and irritation or more severe effects, including corneal opacification and loss of vision. Formaldehyde is absorbed through intact skin and may cause irritation or allergic dermatitis. Ingestion may cause corrosive injury to the gastrointestinal mucosa, with nausea, vomiting, pain, bleeding, and perforation. Systemic effects include metabolic acidosis, CNS depression and coma, respiratory distress, and renal failure.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Advice for emergency responders

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

See Section 12 for additional information.

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 Pick up and transfer to properly labeled containers.

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 Strong oxidizing agents, Alkalis, Acids, Phenols, Urea.

SECTION 8. Exposure controls/personal protection

Control parameters

Chemical Name	Occupational exposure limit values		
	ACGIH TLV	OSHA PEL	NIOSH REL
formaldehyde (non-stabilised)	Ceiling: 0.3 ppm	TWA: 0.75 ppm STEL: 2 ppm	IDLH: 20 ppm TWA: 0.016 ppm Ceiling: 0.1 ppm

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

Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use.

SECTION 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear
Odor	Pungent Characteristic
Color	Light yellow
Odor Threshold	No information available
pH	5.4 @ 20 °C
Melting point/freezing point	No information available
Initial boiling point and boiling range	-19.5 °C (formaldehyde)
Flash point	185 °C Closed cup (37% formaldehyde, methanol-free)
Evaporation rate	No information available
Flammability (solid, gas)	No information available
Upper flammability limit	73% No information available.
Lower flammability limit	7% No information available.
Vapor pressure	3,890 mm Hg @ 25 °C (formaldehyde)
Vapor density	No information available
Relative density	No information available
Solubility	No information available.
Solubility in other solvents	No information available
Partition coefficient: n-octanol/water	0.35 (formaldehyde)
Autoignition temperature	No information available
Decomposition temperature	No information available.
Explosive properties	No information available
Oxidizing properties	No information available
VOC content	No information available
Viscosity	No information available.
Density	No information available.

SECTION 10. Stability and reactivity**Reactivity**

No information available.

Chemical stability

Stable under recommended storage conditions. Sealed with nitrogen gas.

Possibility of hazardous reactions

Hazardous reactions None under normal processing.
Hazardous polymerization Polymerization can occur.

Conditions to Avoid

No information available.

Incompatible Materials

Strong oxidizing agents, Alkalis, Acids, Phenols, Urea.

Hazardous Decomposition Products

None under normal use. Reacts with HCl to form bis-Chloromethyl ether.

SECTION 11. Toxicological information**Information on likely routes of exposure**

Inhalation Vapours may irritate throat and respiratory system. Toxic by inhalation.
Eye contact Vapor may cause irritation. Contact with eyes may cause irritation.
Skin contact Irritating to skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Harmful in contact with skin.
Ingestion Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

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.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
formaldehyde (non-stabilised)	= 100 mg/kg (Rat)	= 270 mg/kg (Rabbit)	= 250 ppm (Rat) 4 h

NOAEL Oral Value Rat 2-Year Bioassay: 15 mg/kg/day
LOAEL Oral Value Rat 2-Year Bioassay: 82 mg/kg/day (Reduced weight gain, histopathology in rats)

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

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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.

SECTION 14. Transport information

This material is subject to regulation as a hazardous material for shipping when offered or intended by aircraft.

DOT

UN number UN3334
UN proper shipping name Aviation regulated liquid, n.o.s. (formaldehyde)
Transport hazard class(es) 9
Special precautions for user A35, A189
Emergency Response Guide Number 171

IATA

UN number UN3334
UN proper shipping name Aviation regulated liquid, n.o.s. (formaldehyde)
Transport hazard class(es) 9
Packing Group III
Special precautions for user A27

SECTION 15. Regulatory information**North American Inventory Listing**

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
formaldehyde (non-stabilised)	Listed	Not Listed	Listed	Not Listed

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS No.	SARA 313 - Threshold Values %
formaldehyde (non-stabilised)	50-00-0	0.1

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 contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

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Symptoms

Low-dose acute exposure can result in headache, rhinitis, and dyspnea; higher doses may cause severe mucous membrane irritation, burning, and lacrimation, and lower respiratory effects such as bronchitis, pulmonary edema, or pneumonia. Sensitive individuals may experience asthma and dermatitis, even at very low doses. Ocular exposure to formaldehyde vapors produces irritation and lacrimation. Depending on the concentration, formaldehyde solutions may cause transient discomfort and irritation or more severe effects, including corneal opacification and loss of vision. Formaldehyde is absorbed through intact skin and may cause irritation or allergic dermatitis. Ingestion may cause corrosive injury to the gastrointestinal mucosa, with nausea, vomiting, pain, bleeding, and perforation. Systemic effects include metabolic acidosis, CNS depression and coma, respiratory distress, and renal failure.

Skin corrosion/irritation

Irritating to skin.

Serious eye damage/eye irritation

Irritating to eyes.

Corrosivity

No information available.

Sensitization

May cause sensitization of susceptible persons.

Mutagenic effects

No specific testing was done on this product. Mutagenic testing of the hazardous ingredient in this product has resulted in some positive mutagenic results.

Carcinogenicity

The list below indicates any ingredient listed as a carcinogen:

Chemical Name	IARC	NTP	OSHA
formaldehyde (non-stabilised) 50-00-0	1	Known	X

Legend:

IARC: (International Agency for Research on Cancer) Group 1 - Carcinogenic to Humans

NTP: (National Toxicity Program) Known - Known Carcinogen

OSHA: (Occupational Safety & Health Administration) X - Present

Reproductive toxicity

There is limited evidence that formaldehyde causes adverse reproductive effects. Formaldehyde has not been proven to be teratogenic in animals and is probably not a human teratogen at occupationally permissible levels.

STOT - single exposure

Respiratory system.

STOT - repeated exposure

No information available.

Neurological effects

No information available.

Aspiration Hazard

No information available.

SECTION 12. Ecological information**Ecotoxicity**

Product does not present an aquatic toxicity hazard based on known or supplied information.

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
formaldehyde (non-stabilised)	-	LC50 41 mg/L (Brachydanio rerio) 96 h LC50 23.2 - 29.7 mg/L (Pimephales promelas) 96 h LC50 1510 µg/L (Lepomis macrochirus) 96 h LC50 100 - 136 mg/L (Oncorhynchus mykiss) 96 h LC50 22.6 - 25.7 mg/L (Pimephales promelas) 96 h LC50 0.032 - 0.226 mL/L (Oncorhynchus mykiss) 96 h	EC50 11.3 - 18 mg/L (Daphnia magna) 48 h LC50 2 mg/L (Daphnia magna) 48 h

Persistence and degradability

Readily biodegradable.

Bioaccumulation

Does not bioaccumulate.

Mobility

Will likely be mobile in the environment due to its water solubility

Chemical Name	Octanol-Water Partition Coefficient
formaldehyde (non-stabilised)	0.35

Other adverse effects

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Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances	CWA - Bioaccumulative Chemicals of Concern (BCCs)
formaldehyde (non-stabilised)	100 lb	Not Listed	Not Listed	Listed	Not Listed

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
formaldehyde (non-stabilised)	100 lb	100 lb

California Proposition 65

This product contains the following Proposition 65 chemicals:

Chemical Name	California Prop. 65
formaldehyde (non-stabilised)	Carcinogen

U.S. State Right-to-Know Regulations

This product contains the following U.S. State Right to Know chemicals:

Chemical Name	New Jersey	Massachusetts	Pennsylvania
formaldehyde (non-stabilised)	Listed	Listed	Listed

U.S. FIFRA Label Information

This product does not contain any substances regulated as pesticides.

US Commerce Department - Export Administration Regulations Information

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

U.S. Drug Enforcement Administration Information

This product does not contain any substances regulated under the DEA.

SECTION 16. Other information

Issuing Date: 2014-04-02

Revision Date: 2014-05-07

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

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Safety Data Sheet (SDS) According to the OSHA Hazard Communication Standard 29 CFR 1910.1200
 Issuing Date: 2014-02-24 Revision Date: 2014-02-24 Version: 1

SECTION 1. Identification

Product identifier

Product number 9808
 Product name Phosphate Buffered Saline (PBS-20X)
 Other means of identification 9808BC, 9808P, 9808P2, 9808S

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
 United States
 TEL: +1 978 867 2300
 FAX: +1 978 867 2400

Website www.cellsignal.com
 Email address support@cellsignal.com
 Emergency telephone number In case of emergency call CHEMTREC 1-800-424-9300

SECTION 2. Hazard(s) identification

Classification

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

Serious eye damage/eye irritation Category 2B

GHS Label elements, including precautionary statements

Signal Word

Warning

Hazard statement(s)

Causes eye irritation.

Precautionary Statement(s)

Wash face, hands and any exposed skin thoroughly after handling.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Supplementary Hazard Information

No information available.

SECTION 3. Composition/information on ingredients

9808 - Phosphate Buffered Saline (PBS-20X) Revision Date: 2014-02-24

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 Pick up and transfer to properly labeled containers.

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

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 Liquid
 Appearance No information available
 Color Colorless
 Odor No information available
 Odor Threshold No information available
 pH 7.4
 Melting point/freezing point range 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.

9808 - Phosphate Buffered Saline (PBS-20X) Revision Date: 2014-02-24

Chemical nature Aqueous buffer solution

Chemical Name	CAS No	Weight %
sodium chloride	7647-14-5	10-30

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 If swallowed, do not induce vomiting - seek medical advice.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Advice for emergency responders

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

See Section 12 for additional information.

9808 - Phosphate Buffered Saline (PBS-20X) Revision Date: 2014-02-24

Lower flammability limit No information available
 Vapor pressure No information available
 Vapor density No information available
 Relative density No information available
 Solubility No information available
 Solubility in other solvents No information available
 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
 VOC content No information available
 Viscosity No information available.
 Density No information available.
 Solubility in other solvents No information available

SECTION 10. Stability and reactivity

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 There is no data available for this product.
 Eye contact May cause temporary eye irritation.
 Skin contact There is no data available for this product.
 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.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
sodium chloride	3000 mg/kg (Rat)	10 g/kg (Rabbit)	42 g/m ³ (Rat) 1 h

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

Symptoms	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	No information available.
STOT - repeated exposure	No information available.
Neurological effects	No information available.
Aspiration Hazard	No information available.

SECTION 12. Ecological information**Ecotoxicity**

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
sodium chloride	-	LC50 5560 - 6080 mg/L (Lepomis macrochirus) 96 h LC50 12946 mg/L (Lepomis macrochirus) 96 h LC50 4747 - 7524 mg/L (Oncorhynchus mykiss) 96 h LC50 7050 mg/L (Pimephales promelas) 96 h LC50 6420 - 6700 mg/L (Pimephales promelas) 96 h LC50 6020 - 7070 mg/L (Pimephales promelas) 96 h	EC50 340.7 - 469.2 mg/L (Daphnia magna) 48 h EC50 1000 mg/L (Daphnia magna) 48 h

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.

SECTION 14. Transport information

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

SECTION 15. Regulatory information**North American Inventory Listing**

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL

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SECTION 16. Other information

Issuing Date: 2014-02-24
Revision Date: 2014-02-24
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

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sodium chloride	Listed	Not Listed	Listed	Not Listed
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Canadian Workplace Hazardous Materials Information System (WHMIS) Classification

	Class D2B - Toxic Material at >= 1%
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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.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
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 contains the following U.S. State Right to Know chemicals:

Chemical Name	New Jersey	Massachusetts	Pennsylvania
disodium hydrogenorthophosphate	Listed	Listed	Listed

U.S. FIFRA Label Information

This product does not contain any substances regulated as pesticides.

US Commerce Department - Export Administration Regulations Information

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

U.S. Drug Enforcement Administration Information

This product does not contain any substances regulated under the DEA.

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