

Store at
4°C

#24417

CellSimple™ Propidium Iodide (PI)/ RNase Staining Solution Kit

1 Kit (100 assays)



Cell Signaling
TECHNOLOGY®

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

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

Rev. 11/11/16

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

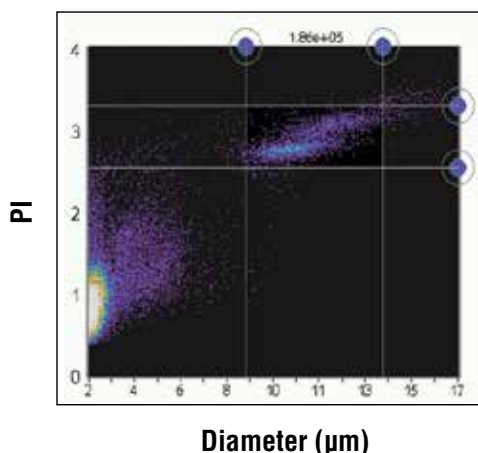
Products Included	Product #	Quantity
Propidium Iodide (PI)/RNase Staining Solution	4087	25 ml
10% Triton™ Cell Lysis Buffer	14050	10 ml

Description: CellSimple™ Propidium Iodide (PI)/RNase Staining Solution Kit is designed for use with the CellSimple™ Cell Analyzer. It detects cellular DNA content in both living and fixed cells. The median fluorescent intensity (MFI) of the red emission (PMT1) can be used as an indicator for cellular DNA content. This kit can be used together with Cell Cycle App on the CellSimple™ Cell Analyzer for cell cycle progression analysis. At the recommended reagent concentrations and volumes, one kit will provide for 100 assays. The CellSimple™ Cell Analyzer comes complete with a pack of 25 cassettes (50 tests), a USB cord and power adapter, and user documentation.

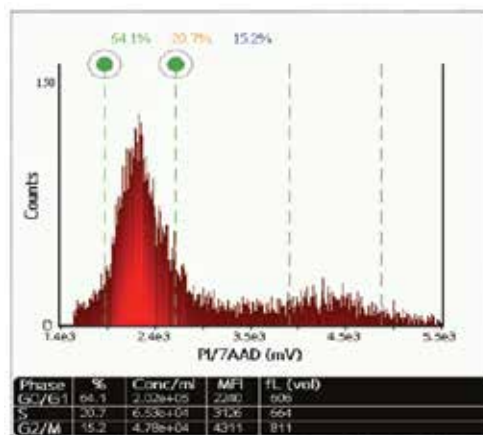
The CellSimple™ Cell Analyzer is currently only available in the US.

Background: 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.

Propidium Iodide (PI) is a fluorescent dye which intercalates between bases and stains both DNA and RNA. Specific DNA staining is achieved by enzymatic removal of RNA with a ribonuclease (RNase). PI/RNase is commonly used as a nuclear stain in fluorescent microscopy and as a DNA content determinant in cell cycle analyses by flow cytometry. Cells in G2 and M phases of the cell cycle contain twice the DNA content compared to those in G0 and G1 phases. DNA content during S phase lies between these extremes. PI/RNase Staining Solution has excitation and emission maxima of 535 and 617 nm, respectively (orange to red range of the spectrum) (1-3).



Live HeLa cells stained with CellSimple™ Propidium Iodide (PI)/RNase Staining Solution Kit were analyzed on the CellSimple™ Cell Analyzer using the Cell Cycle App. Gates were positioned to place the cell cycle cluster into the highlighted region in the upper right region of the plot.



Live HeLa cells stained with CellSimple™ Propidium Iodide (PI)/RNase Staining Solution Kit were analyzed on the CellSimple™ Cell Analyzer using the Cell Cycle App. The cell populations in G₀/G₁, S, and G₂/M phase are shown at the bottom of the screen.

Storage: Store at 4°C. Protect from light. Kit components are stable for 12 months.

Background References:

- (1) Suzuki, T. et al. (1997) *J Histochem Cytochem* 45, 49-53.
- (2) Jones, K.H. and Kniss, D.A. (1987) *J Histochem Cytochem* 35, 123-5.
- (3) Deitch, A.D. et al. (1982) *J Histochem Cytochem* 30, 967-72.

For product specific protocols and a complete listing of recommended companion products please see the product web page at www.cellsignal.com

Triton is a trademark of The Dow Chemical Company.

Thank you for your recent purchase. If you would like to provide a review visit cellsignal.com/comments.

www.cellsignal.com

© 2016 Cell Signaling Technology, Inc.

CellSimple and Cell Signaling Technology are trademarks of Cell Signaling Technology, Inc.

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™ Propidium Iodide (PI)/RNase Staining Solution Kit Protocol

A Solutions and Reagents

Kit Components

1. Propidium Iodide (PI)/RNase Staining Solution #4087
2. 10% Triton™ Cell Lysis Buffer #14050

Additional Reagents (Not Supplied)

Phosphate Buffered Saline (PBS-20X) #9808

B Instrumentation

1. CellSimple™ Cell Analyzer #88416
2. CellSimple™ Cassettes #35423

C Reagent Preparation

NOTE: Allow all reagents to reach room temperature.

1. **1X PBS:** To prepare 1 L 1X PBS: add 50 ml 20X PBS to 950 ml dH₂O, mix.
Note: For flow cytometry application, adding 0.5% BSA to 1X PBS buffer may help prevent cell loss.

D Cell Cycle Assay

1. Prepare a volume of cells ranging from 0.25 – 1.0 ml and a density of 2.5×10^5 to 5×10^5 cell/ml.
2. Centrifuge cells at 300G for 5 min then aspirate media.
3. Wash cells using 1.0 ml of 1X PBS, repeat step 2.
4. Aspirate 1X PBS and re-suspend cells in PI/RNase staining solution (same volume used in step 1).
5. If using live cells 10% Triton™ Cell Lysis Buffer needs to be added to permeabilized the cell membrane. A final concentration of 0.05% or a 1:200 dilution from the 10% stock solution will be adequate for this step.
6. Incubate cells at 37°C for 15 min then analyze using the Cell Cycle App on the CellSimple™ Cell Analyzer.
Note: Cells may need to be diluted for optimal data analysis, use the PI/RNase Staining Solution as a diluent.

SECTION 1. Identification

Product identifier

Product number 14050
 Product name Triton™ Cell Lysis Buffer

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
 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 substance/mixture 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 1

GHS Label elements, including precautionary statements



Signal Word
 Danger

Hazard statement(s)
 Causes skin irritation
 Causes serious eye damage

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

Wear self contained breathing apparatus for fire fighting if necessary.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Use personal protective equipment. Avoid contact with the skin and the eyes. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
 Other information No information available.

Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

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 Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Prevent product from entering drains. Dam up.

SECTION 7. Handling and storage

Precautions for safe handling

Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Prevent the formation of vapors, mists and aerosols.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage Keep container tightly closed. Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labeled containers.
 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.

Precautionary Statement(s)

Wash face, hands and any exposed skin thoroughly after handling
 Wear protective gloves/protective clothing/eye protection/face protection
 Avoid release to the environment
 IF ON SKIN: Wash with plenty of soap and water
 If skin irritation occurs: Get medical advice/attention
 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 immediately call a POISON CENTER or doctor/physician

Supplementary Hazard Information

Hazards not otherwise classified (HNOC) Harmful to aquatic life with long lasting effects.

SECTION 3. Composition/information on ingredients

Synonyms

Triton™ X-100; Octoxynol; p-tertiary-Octylphenoxy polyethyl alcohol; t-Octylphenoxy polyoxyethanol; Poly(oxy-1,2-ethanediyl); alpha-(4-(1,1,3,3-tetramethylbutyl)phenyl)-omega-hydroxy-; Glycols, polyethylene, mono(p-(1,1,3,3-tetramethylbutyl)phenyl) ether

Chemical Name	CAS No	Weight %
polyethylene glycol	9002-93-1	5-10
p-(1,1,3,3-tetramethylbutyl)phenylether		

SECTION 4. First-aid measures

Eye contact Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing.
Skin contact Wash off immediately with plenty of water for at least 15 minutes. If symptoms persist, call a physician. Immediate medical attention is not required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.
Inhalation Move to fresh air. If symptoms persist, call a physician. Immediate medical attention is not required. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Ingestion Immediate medical attention is not required. Rinse mouth. Drink plenty of water. Do NOT induce vomiting. Clean mouth with water. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician. 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 Immediate medical attention is not required. Show this safety data sheet to the doctor in attendance. If symptoms persist, call a physician.
Protection of first-aiders Use personal protective equipment.

SECTION 5. Fire-fighting measures

Extinguishing media

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 Tightly fitting safety goggles. Face-shield.
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 When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Provide regular cleaning of equipment, work area and clothing.

SECTION 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state Liquid
Appearance Clear
Odor No information available
Color Light yellow
Odor Threshold No information available
pH 7.2 @ 20 °C
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 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.

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	Vapours may irritate throat and respiratory system.
Eye contact	May cause irreversible damage to eyes.
Skin contact	Contact with skin may cause irritation.
Ingestion	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
polyethylene glycol p-(1,1,3,3-tetramethylbutyl)phenylether	= 1800 mg/kg (Rat)	= 8000 mg/kg (Rabbit)	-

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	Risk of serious damage to eyes.
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.
Chronic Toxicity	Avoid repeated exposure.
Neurological effects	No information available.
Aspiration Hazard	No information available.

SECTION 12. Ecological information**Ecotoxicity**

Harmful to aquatic life with long lasting effects

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
polyethylene glycol p-(1,1,3,3-tetramethylbutyl)phenylether	-	LC50 8.9 mg/l (Pimephales promelas) 96 h	EC50 26 mg/l (Daphnia) 48 h

Persistence and degradability	Not readily biodegradable. Degrades to 4-tert-octylphenol [4-tert-OP].
Bioaccumulation	Not likely to bioaccumulate.
Mobility	Will likely be mobile in the environment due to its water solubility

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
polyethylene glycol p-(1,1,3,3-tetramethylbutyl)phenylether	Listed	Not Listed	Listed	Not Listed

Canadian Workplace Hazardous Materials Information System (WHMIS) Classification

	Class D2B - Toxic Material at >= 1%
--	-------------------------------------

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.

SECTION 16. Other information

Issuing Date: 2014-08-05
Revision Date: 2014-08-05
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