



Safety Data Sheet (SDS) According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

Issuing Date: 2017-08-20

Version: 1

SECTION 1. Identification

Product identifier

Product No 59496
Product name CellSimple™ Cellular Reactive Oxygen Species (ROS) Detection Assay Kit
Kit Component DCFH-DA
TBHP
Loading Buffer
Phosphate Buffered Saline (PBS-20X)
UN number UN3316

Recommended use of the chemical and restrictions on use

Identified uses This product is intended for research purposes only.

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)

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 3
Acute inhalation toxicity	Category 2
Skin corrosion/irritation	Category 1
Subcategory	Sub-category B
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Specific target organ toxicity - single exposure (STOT SE)	Category 3
Flammable liquids	Category 3
Organic peroxides	Type F

GHS Label elements, including precautionary statements



Signal Word

Danger

Hazard statement(s)

Heating may cause a fire.

Flammable liquid and vapor.

Harmful if swallowed. Toxic in contact with skin. Fatal if inhaled. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Suspected of causing genetic defects. May cause respiratory irritation.

Precautionary Statement(s)

Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Wash face, hands and any exposed skin thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves. Do not eat, drink or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Avoid contact during pregnancy/while nursing. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Keep container tightly closed. Keep only in original container. Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep/store away from clothing/combustible materials.

IF exposed or concerned: Get medical advice/attention.

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.

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.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. Call a POISON CENTER or doctor/physician if you feel unwell.

In case of fire: Use Water spray, fog or regular foam for extinction.

Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store at temperatures not exceeding 8 °C/ 46.4 °F.

Keep cool. Protect from sunlight. Store away from other materials.

Dispose of contents/container to an approved waste disposal plant.

Supplementary Hazard Information

No information available.

Hazards not otherwise classified (HNOC)

Not applicable.

SECTION 3. Composition/information on ingredients

Kit Component Name

DCFH-DA

Chemical Name	CAS No	Weight %	Hazardous
Benzoic acid, 2-(3,6-bis(acetyloxy)-2,7-dichlor o-9H-xanthen-9-yl)-	4091-99-0	100	Yes

Kit Component Name

TBHP

Chemical Name	CAS No	Weight %	Hazardous
tert-Butyl hydroperoxide	75-91-2	60-100	Yes

Kit Component Name

Loading Buffer

Phosphate Buffered Saline (PBS-20X)

The product contains no substances known to be hazardous to health in concentrations which need to be taken into account.

SECTION 4. First-aid measures

Eye contact	Immediate medical attention is required. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing.
Skin contact	Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Wash contaminated clothing before reuse.
Inhalation	Move to fresh air. Immediate medical attention is required. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Ingestion	Immediate medical attention is required. Do NOT induce vomiting. Rinse mouth. Drink plenty of water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Contains kit components which may cause the following effects, refer to individual component SDSs for full information on symptoms:

Corrosive to the eyes and may cause irreversible eye damage. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Advice for emergency responders

General advice	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
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	Water spray or fog. Carbon dioxide (CO ₂). Alcohol-resistant foam. Dry chemical. Flood fire area with water from a distance.
Unsuitable Extinguishing Media	CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating gases and vapors.

Explosion Data

Sensitivity to Mechanical Impact	Yes.
Sensitivity to Static Discharge	Yes.

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	Evacuate personnel to safe areas. Use personal protective equipment. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Take precautionary measures against static discharges. Remove all sources of ignition. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
Other information	No information available.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Should not be released into the environment. Prevent entry into waterways, sewers, basements or confined areas. Prevent spreading of vapors through sewers, ventilation systems and confined areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). A vapor suppressing foam may be used to reduce vapors.

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	Dike to collect large liquid spills. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically and collect in suitable container for disposal. Clean contaminated surface thoroughly. After cleaning, flush away traces with water.

SECTION 7. Handling and storage

Precautions for safe handling

Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Use only in an area containing flame proof equipment. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. There is a hazard associated with rags, paper or any other material used to remove spills which become soaked with product. Avoid accumulation of these: they are to be disposed off safely after use. Avoid static electricity build up with connection to earth.

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	The product is a strong oxidant and reacts violently with: metallic or sulphur compounds, combustible, reducing and organic materials.

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	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. Keep away from food, drink and animal feeding stuffs. Provide regular cleaning of equipment, work area and clothing. Contaminated work clothing should not be allowed out of the workplace. For environmental protection, remove and wash all contaminated protective equipment before re-use. Remove and wash contaminated clothing before re-use.

SECTION 9. Physical and chemical properties

Information on the known physical chemical properties of each component within Kit are given below. If not included, information is either not available or not applicable. Refer to individual kit component SDS for further information.

Information on basic physical and chemical properties

Kit Component	DCFH-DA
Physical state	Solid
Appearance	Lyophilized Crystalline powder
Color	light red
Melting point (°C) VALUE	232
Kit Component	TBHP
Physical state	Liquid
Appearance	Clear
Color	light yellow
Odor	Pungent
pH VALUE	4.3
Remarks	@ 20 °C
Boiling point/range (°C) VALUE	96.2
Remarks	@ 1013 hPa
Melting point (°C) VALUE	-3
Remarks	@ 1013 hPa
Flash point (°C) VALUE	42
Method	Closed cup
Vapor pressure	30.73 hPa @ 20 °C
Solubility	Soluble in water
Upper flammability limit	10.15%
Lower flammability limit	5.75%
Kit Component	Loading Buffer
Physical state	Liquid
Appearance	Clear
Kit Component	Phosphate Buffered Saline (PBS-20X)
Physical state	Liquid
Color	Colorless
pH VALUE	7.4

SECTION 10. Stability and reactivity

Reactivity

Reacts with incompatible materials causing a fire and explosion hazard.

Chemical stability

Heating may cause an explosion.

Possibility of hazardous reactions

Hazardous reactions

Risk of explosion if heated under confinement.

Hazardous polymerization

None under normal processing.

Conditions to Avoid

Heat, flames and sparks. Exposure to air or moisture over prolonged periods.

Incompatible Materials

The product is a strong oxidant and reacts violently with: metallic or sulphur compounds, combustible, reducing and organic materials.

Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 11. Toxicological information

Information on likely routes of exposure

Product Information

Refer to kit component SDS for full toxicological information. 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.

Inhalation

Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate.

Kit Component
Inhalation

TBHP
Toxic by inhalation

Eye contact

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Kit Component
Eye contact

DCFH-DA
Severely irritating to eyes

Kit Component
Eye contact

TBHP
Corrosive to the eyes and may cause severe damage including blindness

Skin contact

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Kit Component
Skin contact

DCFH-DA
Expected to be an irritant based on components

Kit Component
Skin contact

TBHP
Corrosive to skin. Toxic in contact with skin

Ingestion

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Kit Component
Ingestion

TBHP
Ingestion causes burns of the upper digestive and respiratory tract. Harmful if swallowed

Information on toxicological effects

Kit Component
ATEmix (oral) 529 mg/kg
ATEmix (dermal) 657 mg/kg
ATEmix (inhalation-vapor) 2.64 mg/L

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
tert-Butyl hydroperoxide	= 370 mg/kg (Rat) = 560 mg/kg (Rat)	= 628 mg/kg (Rabbit) = 790 mg/kg (Rat)	= 1.85 mg/L (Rat) 4 h = 500 ppm (Rat) 4 h

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

Symptoms

Contains kit components which may cause the following effects, refer to individual component SDSs for full information on symptoms:

Corrosive to the eyes and may cause irreversible eye damage. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.

Skin and Eye Corrosion/Irritation

Kit Component
Skin corrosion/irritation
Serious eye damage/eye irritation

DCFH-DA
Irritating to skin
Causes serious eye irritation

Kit Component
Skin corrosion/irritation
Serious eye damage/eye irritation

TBHP
Causes severe burns
Risk of serious damage to eyes

Sensitization

Kit Component
Skin Sensitization

TBHP
May cause skin sensitization.

Mutagenic effects

Kit Component
Mutagenic effects

TBHP
Mutagenic in vitro in the bacterial reverse mutation assays (AMES test).

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.

Systemic Target Organ Toxicity (STOT)

Kit Component **DCFH-DA**
STOT - single exposure Respiratory system

Aspiration Hazard No information available.

SECTION 12. Ecological information

Ecotoxicity

Product Information

Kit Component **TBHP**
Ecotoxicity Toxic to aquatic life with long lasting effects

Component Information

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
tert-Butyl hydroperoxide	EC50 2.1 mg/L (Pseudokirchneriella subcapitata) 72 h	LC50 57 mg/L (Brachydanio rerio) 96 h LC50 42.3 mg/L (Pimephales promelas) 96 h	EC50 20 mg/L (Daphnia magna) 48 h

Persistence and degradability .

Kit Component **TBHP**
Persistence and degradability Not readily biodegradable

Bioaccumulation .

Kit Component **TBHP**
Bioaccumulation Material may have some potential to bioaccumulate
Bioconcentration factor (BCF) 3

Chemical Name	Octanol-Water Partition Coefficient
tert-Butyl hydroperoxide	0.7

Mobility

Kit Component **TBHP**
Mobility Is predicted to have low mobility in the environment

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 subject to regulation as a hazardous material for shipping:

DOT

UN number	UN3316
UN proper shipping name	Chemical Kits
Transport hazard class(es)	9
Packing group	II
Special provisions	15
Emergency response guide number	171

IATA

UN number	UN3316
UN proper shipping name	Chemical Kits
Transport hazard class(es)	9
Packing group	II
Special provisions	A163, A44

SECTION 15. Regulatory information

North American Inventory Listing

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
Benzoic acid, 2-(3,6-bis(acetyloxy)-2,7-dichloro-9H-xanthen-9-yl)-	Listed	Not Listed	Listed	Not Listed
tert-Butyl hydroperoxide	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 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	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

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

Refer to kit component SDS for applicable State Right-To-Know (RTK) information.

Chemical Name	New Jersey	Massachusetts	Pennsylvania
tert-Butyl hydroperoxide	Listed	Listed	Listed
disodium hydrogenorthophosphate	Listed	Listed	Listed

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