

SDS DATE: July 10, 2023

**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME:** Catalase Activity Assay  
**PRODUCT CODE:** Cat# MA-0143  
**RESTRICTIONS ON USE:** For laboratory research purposes only. Not for drug or household use.  
**MANUFACTURER:** AkrivisBio, Inc.  
**ADDRESS:** 48511 Warm Springs Blvd, Suite 213, Fremont, CA 94539  
**EMERGENCY PHONE:** 408-739-9315  
**CHEMTREC PHONE:**  
**OTHER CALLS:**  
**FAX PHONE:**  
**Email:** SDS@akrivisbio.com

**SECTION 2: HAZARDS IDENTIFICATION**

| Component                             | Description        | Volume | Safety Information |
|---------------------------------------|--------------------|--------|--------------------|
| Catalase Assay Buffer                 | Proprietary Buffer | 25 ml  | No hazards         |
| OxiRed™ Probe (in DMSO)               | In DMSO            | 200 µl | See below          |
| HRP (lyophilized)                     | Lyophilized        | 1 vial | No hazards         |
| H <sub>2</sub> O <sub>2</sub> (0.88M) | Liquid             | 25 µl  | See below          |
| Stop Solution                         | Liquid             | 1 ml   | No hazards         |
| Catalase Positive Control             | Liquid             | 2 µl   | No hazards         |

**DMSO:****Emergency Overview****GHS Classification:** Flammable liquids (Category 4)**GHS Label elements, including precautionary statements.****Pictogram:** none**Signal word:** Warning**Hazard statement(s):** H227 Combustible liquid**Precautionary statement(s):** none**HMIS Classification**

Health hazard: 0

Chronic Health Hazard: \*

Flammability: 2

Physical hazards: 0

**NFPA Rating**

Health hazard: 0

Fire: 2

Reactivity Hazard: 0

**Potential Health Effects****Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.**Skin:** May be harmful if absorbed through skin. May cause skin irritation.**Eyes:** May cause eye irritation.**Ingestion:** May be harmful if swallowed.**Aggravated Medical Condition:** Avoid contact w/DMSO solutions containing toxic materials or materials with unknown toxicological properties. DMSO is readily absorbed through skin and may carry such materials into the body.**Hydrogen peroxide:****Emergency Overview****GHS Classification:**

Oxidizing liquids (Category 1)

Acute toxicity, Oral (Category 4)

Acute toxicity, Inhalation (Category 5)

Skin corrosion (Category 1A)

Serious eye damage (Category 1)

Acute aquatic toxicity (Category 3)

**GHS Label elements, including precautionary statements****Pictogram:****Signal word:**

Danger

**Hazard statement(s):**

H315: Causes skin irritation

H318: Causes serious eye damage

H402: Harmful to aquatic life.

**Precautionary statement(s):** P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**HMIS Classification**

Health hazard: 3

Chronic health hazard: \*

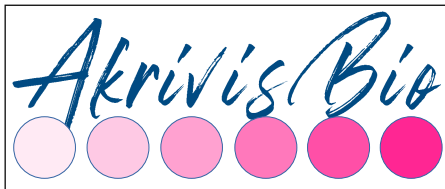
Flammability: 0

Physical hazards: 3

**NFPA Rating**

Health Hazard: 3

Fire: 0



Reactivity Hazard: 0

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component         | CAS Number | EC-No.    | Molecular Weight | Chemical Formula                 |
|-------------------|------------|-----------|------------------|----------------------------------|
| DMSO              | 67-68-5    | 200-664-3 | 78.13            | C <sub>2</sub> H <sub>6</sub> OS |
| Hydrogen Peroxide | 7722-84-1  | 231-765-0 | 34.01            | H <sub>2</sub> O <sub>2</sub>    |

### SECTION 4: FIRST AID MEASURES

**General advice:** Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled:** If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact:** Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed:** DO NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

### SECTION 5: FIRE-FIGHTING MEASURES

#### DMSO:

**Suitable extinguishing media:** For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

**Special protective equipment for firefighters:** Wear self-contained breathing apparatus for firefighting if necessary.

**Hazardous combustion products:** Hazardous decomposition products formed under fire conditions – see section 10.

**Further information:** Use water spray to cool unopened containers.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

**Environmental precautions:** Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods for cleaning up:** Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

### SECTION 7: HANDLING AND STORAGE

#### Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

#### Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Recommended storage temperature: 4°C.

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### DMSO:

| Components         | CAS-No. | Value | Control parameters | Basis   |
|--------------------|---------|-------|--------------------|---|
| Dimethyl sulfoxide | 67-68-5 | TWA   | 250 ppm            | USA. Workplace Environmental Exposure Levels (WEEL) |

#### Hydrogen Peroxide:

| Components                                     | CAS-No.  | Value | Control parameters             | Basis  |
|--|--|-------|--------------------------------|--|
| Hydrogen peroxide                              | 7722-84-1  | TWA   | 1 ppm                          | USA. ACGIH Threshold Values (TLV)  |
| Remarks:                                       | Eye, skin, & upper respiratory tract irritation. Confirmed animal carcinogen with unknown relevance to humans. |       |                                |  |
|  |  | TWA   | 1 ppm<br>1.4 mg/m <sup>3</sup> | USA. NIOSH Recommended Exposure Limits   |
|  |  | TWA   | 1 ppm<br>1.4 mg/m <sup>3</sup> | USA. Occupational Exposure Limits (OSHA) – Table Z-1 – Limits for Air Contaminants |
| The value in mg/m <sup>3</sup> is approximate. |  |       |                                |  |
|  |  | TWA   | 1 ppm<br>1.4 mg/m <sup>3</sup> | USA. OSHA – Table Z-1 Limits for Air Contaminants – 1910.1000                      |

#### Personal protective equipment

##### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

##### Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

##### Eye protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

##### Skin and body protection

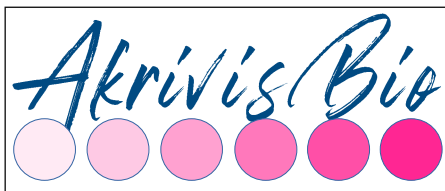
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

##### Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| Property | DMSO | Hydrogen peroxide |
|----------|------|-------------------|
|          |      |                   |



|                                   |                     |                   |
|-----------------------------------|---------------------|-------------------|
| <b>Appearance:</b>                | Clear liquid        | Clear liquid      |
| <b>pH:</b>                        | No data available   | No data available |
| <b>Water Solubility:</b>          | Completely miscible | No data available |
| <b>Other Solubility:</b>          | No data available   | No data available |
| <b>Boiling Point (°C):</b>        | 189 °C (372 °F)     | No data available |
| <b>Melting Point (°C):</b>        | 16-19 °C (61-66 °F) | No data available |
| <b>Flash Point (°C):</b>          | 87 °C (189 °F)      | No data available |
| <b>Ignition Temperature (°C):</b> | 301 °C (574 °F)     | Hydrogen peroxide |
| <b>Density:</b>                   | 1.1 g/ml            | Clear liquid      |

## SECTION 10: STABILITY AND REACTIVITY

| Property                                 | DMSO  | Hydrogen peroxide  |
|--|---|--|
| <b>Chemical stability:</b>               | Stable under recommended storage conditions   |  |
| <b>Conditions to avoid:</b>              | Heat, flames, sparks  | No data available  |
| <b>Materials to avoid:</b>               | Acid chlorides, phosphorus halides, strong acids, strong oxidizing agents, strong reducing agents | Zinc, powdered metals, iron, copper, nickel, brass, iron, and iron salts |
| <b>Hazardous decomposition products:</b> | Carbon oxides, sulfur oxides  | No data available  |

## SECTION 11: TOXICOLOGICAL INFORMATION

### DMSO:

**Acute toxicity:** LD50 Oral - rat - 14,500 mg/kg

LC50 Inhalation - rat - 4 h - 40250 ppm

LD50 Dermal - rabbit - > 5,000 mg/kg

**Skin corrosion/irritation:** no data available

**Serious eye damage/eye irritation:** no data available

**Respiratory/skin sensitization:** no data available

**Germ cell mutagenicity:** Genotoxicity in vitro - mouse – lymphocyte → Cytogenetic analysis

Genotoxicity in vitro - mouse – lymphocyte → Mutation in mammalian somatic cells.

Genotoxicity in vivo - rat – Intraperitoneal → Cytogenetic analysis

Genotoxicity in vivo - mouse – Intraperitoneal → DNA damage

**Carcinogenicity:** Carcinogenicity – rat – Oral → Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin & Appendages: Other: Tumors.

Carcinogenicity – mouse – Oral → Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Leukaemia Skin & Appendages: Other: Tumors.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity:** Reproductive toxicity – rat – Intraperitoneal → Effects on Fertility: Abortion.

Reproductive toxicity – rat – Intraperitoneal → Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Reproductive toxicity – rat – Subcutaneous → Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Reproductive toxicity – mouse – Oral → Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

**Teratogenicity:** Developmental Toxicity – mouse – Intraperitoneal → Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

**Signs and Symptoms of Exposure:** Exposure via ingestion may cause nausea, fatigue, headache.

**Additional Information:** RTECS: PV6210000

### Hydrogen peroxide:

**Acute toxicity:** no data available

**Skin corrosion/irritation:** no data available

**Serious eye damage/eye irritation:** no data available

**Respiratory or skin sensitization:** no data available

**Germ cell mutagenicity:** no data available

### **Carcinogenicity:**

IARC: 3 – Group 3: Not classifiable as to its carcinogenicity to humans (Hydrogen peroxide)

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity:** no data available

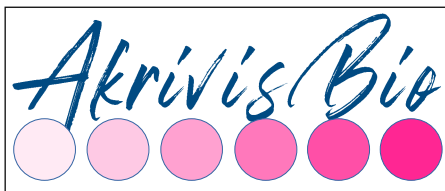
**Teratogenicity:** no data available

**Specific target organ toxicity – single exposure (GHS):** no data available

**Specific target organ toxicity – repeated exposure (GHS):** no data available

**Aspiration hazard:** no data available

**Potential Health Effects**



**Inhalation:** May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Skin:** May be harmful if absorbed through skin. Causes skin burns.

**Eyes:** Causes eye burns.

**Ingestion:** Harmful if swallowed.

**Signs and Symptoms of Exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Additional information:** RTECS: not available

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## SECTION 12: ECOLOGICAL INFORMATION

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### **DMSO:**

**Persistence and degradability:** no data available

**Toxicity:** Toxicity to fish: LC50 – Pimephales promelas (fathead minnow) – 34,000 mg/l – 96 h

LC50 – Oncorhynchus mykiss (rainbow trout) – 35,000 mg/l – 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 – Daphnia pulex (Water flea) – 27,500 mg/l

Toxicity to algae: EC50 – Lepomis macrochirus (Bluegill) – >400,000 mg/l – 96 h

**Bioaccumulative potential:** no data available

**Mobility in soil:** no data available

**PBT and vPvB assessment:** no data available

**Other adverse effects:** no data available

### **Hydrogen peroxide:**

**Persistence and degradability:** no data available

**Toxicity:** no data available

**Bioaccumulative potential:** no data available

**Mobility in soil:** no data available

**PBT and vPvB assessment:** no data available

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

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## SECTION 13: DISPOSAL CONSIDERATIONS

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**Product:** Observe all federal, state, and local environmental regulations.

**Contaminated packaging:** Dispose of as unused product.

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## SECTION 14: TRANSPORT INFORMATION

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### **DMSO:**

**DOT (US):** UN-Number: 1993, Class: CBL, Packing group: III; Proper shipping name: Combustible liquid, n.o.s. (Dimethyl sulfoxide); Marine pollutant: No; Poison Inhalation Hazard: No

**IMDG:** Not dangerous goods.

**IATA:** Not dangerous goods.

### **Hydrogen peroxide:**

**DOT (US):** UN-Number: 2014 Class: 5.1 (8) Packing group: II

Proper shipping name: Hydrogen peroxide, aqueous solutions

Marine pollutant: No

Poison Inhalation Hazard: No

**IMDG:** UN-Number: 2014 Class: 5.1 (8) Packing group: II EMS-No: F-H, S-Q

Proper shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION

Marine pollutant: No

**IATA:** UN-Number: 2014 Class: 5.1 (8) Packing group: II

Proper shipping name: Hydrogen peroxide, aqueous solution

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## SECTION 15: REGULATORY INFORMATION

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**SARA 302 Components:** SARA 302: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components:** SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title II, Section 313.

**SARA 311/312 Hazards:** DMSO: Fire Hazard, Chronic Health Hazard

Hydrogen peroxide: Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components:** Hydrogen peroxide, CAS-No. 7722-84-1; Revision Date: 1993-04-24

**Pennsylvania Right To Know Components:** Dimethyl sulfoxide CAS-No. 67-68-5; Revision Date: 2007-03-01

Hydrogen peroxide, CAS-No. 7722-84-1; Revision Date: 1993-04-24

**New Jersey Right To Know Components:** Dimethyl sulfoxide CAS-No. 67-68-5; Revision Date: 2007-03-01

Hydrogen peroxide, CAS-No. 7722-84-1; Revision Date: 1993-04-24

**California Prop. 65 Components:** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

### **EU regulations**

| Component         | Risk Phrases   | Safety Phrases         |
|-------------------|----------------|------------------------|
| DMSO              | R10, R36/37/38 | S24/25, S36/37/39, S45 |
| Hydrogen peroxide | R22, R41       | S26, S39               |

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## SECTION 16: OTHER INFORMATION

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### **DISCLAIMER:**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. AkrivisBio Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.