

**NBP2-31109 Protocol****MSDS (NBP2-31109)****IDENTIFICATION**

Product Name HEK 293 cells (human embryonic kidney), HeLa cells (human epithelial carcinoma) or RAW cells (mouse macrophage) stably transfected; Dimethyl sulfoxide  
Synonyms Methyl sulfoxide; DMSO; Sulfinylbis (methane)

**COMPOSITION, INFORMATION ON INGREDIENTS**

CAS# none  
Name Cells, human origin  
CAS# 67-68-5  
Chemical Name Dimethyl Sulfoxide  
Percent 10

**HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW**

Appearance: clear liquid. May be absorbed through intact skin. Hygroscopic (absorbs moisture from the air). May cause liver and kidney damage. **CAUTION!** Causes eye and skin irritation. Causes respiratory tract irritation.  
Target Organs: Kidneys, liver, eyes, skin, mucous membranes.

**Potential Health Effects**

Eye: Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. May cause chemical conjunctivitis.

Skin: May cause irritation with burning pain, itching and redness. Substance is rapidly absorbed through the skin.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage. May cause garlic smell on the breath and body.

Inhalation: May cause respiratory tract irritation. Can produce delayed pulmonary edema.

Chronic: Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage. Effects may be delayed.

**FIRST AID MEASURES**

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

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Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

Notes to Physician: Treat symptomatically and supportively.

**FIRE FIGHTING MEASURES**

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

Extinguishing Media: Cool containers with flooding quantities of water until well after fire is out. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: 95 deg C ( 203.00 deg F)

Autoignition Temperature: 215 deg C ( 419.00 deg F)  
Explosion Limits, Lower: 2.6 vol %  
Upper: 42 vol %  
NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 0

#### ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.  
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Do not flush into a sewer. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

#### HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation. Wash clothing before reuse.  
Storage: Keep away from heat, sparks, and flame. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

#### EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

##### Exposure Limits

Chemical Name Dimethyl Sulfoxide  
ACGIH None listed  
NIOSH None listed  
OSHA - Final PELs None listed

OSHA Vacated PELs: Dimethyl sulfoxide: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment Eyes: Wear chemical goggles.  
Skin: Wear appropriate protective gloves to prevent skin exposure.  
Clothing: Wear appropriate protective clothing to prevent skin exposure.  
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

#### PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid  
Appearance: clear  
Odor: slight odor - sulfurous odor - garlic-like odor  
pH: Not available.  
Vapor Pressure: 0.4 mm Hg at 20 Vapor Density: 2.7 (air=1) Evaporation Rate: Not available. Viscosity: 1.1cp @ 27 deg C Boiling Point: 189 deg C Freezing/Melting Point: 18.4 deg C  
Decomposition Temperature: > 200 deg C  
Solubility: Soluble.  
Specific Gravity/Density: 1.1010g/cm3 Molecular Formula: C2H6OS Molecular Weight: 78.13

#### STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.  
Conditions to Avoid: Excess heat.  
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids, strong bases. Hazardous  
Decomposition Products: Carbon monoxide, oxides of sulfur, carbon dioxide. Hazardous Polymerization: Has not been reported.

#### TOXICOLOGICAL INFORMATION RTECS#

CAS# 67-68-5: PV6210000

##### LD50/LC50

CAS# 67-68-5:  
Draize test, rabbit, eye: 100 mg;  
Draize test, rabbit, eye: 500 mg/24H Mild; Draize test, rabbit, skin: 500 mg/24H Mild; Oral, mouse: LD50 = 7920 mg/kg;  
Oral, rat: LD50 = 14500 mg/kg; Skin, rat: LD50 = 40 gm/kg;<BR.

Carcinogenicity

CAS# 67-68-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology: No information available. Teratogenicity: No information available. Reproductive Effects: No information available. Neurotoxicity: No information available.

Mutagenicity: No information available.

Other Studies: See actual entry in RTECS for complete information.

#### ECOLOGICAL INFORMATION

Ecotoxicity: No data available. No information available.

Environmental: Terrestrial: Expected to be mobile in soil, due to its high water solubility. Some volatilization from dry soil and surfaces may be expected. Aquatic: Dimethyl sulfoxide disproportionates in water to dimethyl sulfide and dimethyl sulfone, a reaction catalyzed by light. Atmospheric: Exists primarily in the vapor phase and be removed by both wet and dry deposition. It will react with photochemically-produced hydroxyl radicals with a half-life of about 7 hr. DMSO is very difficult to biodegrade. Physical: No information available.

Other: For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

#### DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed

RCRA U-Series: None listed

#### SPECIAL PRECAUTIONS

Store at 2-8 degrees C in well-sealed container. Store away from strong oxidizing agents. This product is intended for research use only.

#### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

#### WARRANTY

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. NOVUS, 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. Copyright 2008 NOVUS License granted to make unlimited paper copies for internal use only.