MATERIAL SAFETY DATA SHEET

VIVANTIS TECHNOLOGIES SDN BHD
REVONGEN CORPORATION CENTER

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SECTION 1: CHEMICAL IDENTIFICATION

Catalogue Number: PC0906-500ml
Product Name: Dimethyl sulfoxide (DMSO)

Intended Use:
For research use only. Not for use in diagnostic procedures.

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.
Dimethyl Sulfoxide (DMSO)	67-68-5-2	200-664-3

Chemical formula: C_2H_6OS
Molecular weight: 78.13g/mol

SECTION 3: HAZARDS IDENTIFICATION

GHS Classification

Flammable Liquid –	Category 4
Acute Toxicity Oral –	Category 4
Skin Irritant –	Category 2
Eye Irritant –	Category 2

Hazard statements

H227	Combustible liquid
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H302	Harmful if swallowed

Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces – no smoking.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	If on skin, wash with plenty of soap and water.
P304+P340	If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338	If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

SECTION 4: FIRST-AID MEASURES

In case of contact with eyes, rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
In case of contact with skin, wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.
In case of inhalation, move to fresh air. If breathing becomes difficult, give oxygen.
In case of ingestion, clean mouth with water and afterwards drink plenty of water.

SECTION 5: FIRE FIGHTING MEASURES

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray, regular foam, dry chemical or carbon dioxide.
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and fully protective gear.

Hazardous decomposition products formed under fire conditions: Carbon oxides, sulfur oxides.

Flash point:	89°C / 192°F
Explosion data – sensitivity to mechanical impact:	No data available.
Explosion data – sensitivity to static discharge:	No data available.

SECTION 6: ACCIDENTAL RELEASE MEASURES

For personal protection, use personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.
For environmental precaution, prevent further leakage or spillage if safe to do so.
For cleaning up, absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

SECTION 7: HANDLING AND STORAGE

Handle in accordance with good industrial hygiene and safety practice. Hygroscopic. Protect from heat and direct sunlight.
Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from light and moisture. Hygroscopic.
Incompatible with acid chlorides, phosphorus, strong acids, strong oxidizing agents and strong reducing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment	Tightly fit safety goggles wear protective gloves/clothing. 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.

Use engineering measures such as showers, eyewash stations and ventilation systems.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear and colorless
Physical state:	Liquid
Odor:	No information available
Odor threshold:	No information available
Density:	2.7
pH:	No information available
Melting point:	18ºC
Freezing point:	No information available
Initial Boiling point:	No information available
Boiling point:	189ºC
Flash point:	No information available
Autoignition temperature:	573°F / 301°C
Decomposition temperature:	No information available
Upper Flammability limit in air:	No data available
Lower Flammability limit in air:	No data available
Explosive properties:	No information available
Oxidizing properties:	No information available
Solubility:	Soluble in water
Partition coefficient (n-octanol/water):	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Evaporation rate:	No data available
Specific gravity:	1.1
Viscosity:	No information available
Flammable properties:	Combustible

SECTION 10: STABILITY AND REACTIVITY

Stable under recommended storage conditions.

Materials to avoid:	Acid chlorides, phosphorus, strong acids, strong oxidizing agents and strong reducing agents.
Hazardous decomposition products:	Carbon oxides and sulfur oxides.
Hazardous polymerization:	Hazardous polymerization does not occur.
Conditions to avoid:	Hygroscopic. Protect from light and heat.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Irritating to eye, skin and respiratory system. May be harmful if swallowed.

Oral LD50:	Rat – 14500mg/kg
Inhalation LC50:	-
Dermal LD50:	Rat – 40g/kg

Chronic toxicity

No known effect based on information supplied

Target organ effects: Eyes and skin.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic organisms.

LC50:	Fish – Oncorhynchus mykiss – 33-37 g/L – 96hrs
	Fish – Cyprinus carpio – 41.7 g/L – 96hrs
	Fish – Pimephales promelas – 34 mg/L – 96hrs
	Fish – Lepomis macrochirus – >40 g/L – 96hrs
EC50:	Algae – 12350 – 25500 mg/L – 96hrs
	Water flea – Daphnia Magna – 7000 mg/L – 24hrs

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of waste material in accordance with all federal, state, and local regulations.

For contaminated packaging, dispose as waste material.

SECTION 14: TRANSPORT INFORMATION

IATA

Not regulated.

DOT

Not regulated.

SECTION 15: REGULATORY INFORMATION

International inventories

TSCA	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Does not comply
PICCS	Complies
AICS	Complies

United States Federal Information:

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	Yes
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)

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

U.S. State Regulations

California Proposition 65 This product does not contain any Proposition 65 chemicals.

International Regulations

Mexico – Grade No information available

WHMIS Hazard Class

B3 Combustible liquid

D2B Toxic materials

SECTION 16: OTHER INFORMATION

The information contained in this MSDS relates only to the material(s) designed and does not relate to use(s) in combination with any other material, process(es) and /or chemical reaction(s). Vivantis Technologies Sdn. Bhd. provides this information in good faith, from sources believed to be accurate; however, Vivantis assumes no liability for its accuracy or completeness, and thus shall not be held liable for any damage resulting from handling or from contact with the above product.

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