SAFETY DATA SHEET

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SECTION 1: COMPANY AND PRODUCT INFORMATION

1.1 Product identifiers

Product name	:	DMSO Bio-Max, Cell Culture Grade
Product code	:	40470005
CAS number	:	67-68-5
Synonyms	:	DMSO, methyl sulfoxide

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	:	For research and laboratory use only.

1.3 Details of the supplier of the safety data sheet

Address	:	Genelinx International Inc, dba bioWORLD 4150 Tuller Rd. Suite 228 Dublin, OH 43017
Email	:	tech@bio-world.com
Phone	:	614-792-8680, Toll free: 1-888-bio-PLUS
Fax	:	614-792-8685

1.4 Emergency telephone number

Emergency phone	:	1-888-bio-PLUS

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Flammable liquids (Category 4), H227

2.2 GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 4), H227

2.3 Label elements and precautionary statements

Pictogram	:	None
Signal word	:	Warning
Hazard statement(s)	:	H227 - Combustible liquid
Precautionary statement(s)	:	P210 - Keep away from heat/sparks/open flames/hot surfaces - No smoking. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P370+378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. P403+235 - Store in a well-ventilated place. Keep cool. P501 - Dispose of contents/container to an approved waste disposal plant.

2.4 Hazards not otherwise classified (HNOC) or not covered by GHS

This product is rapidly absorbed through skin.

2.5 NFPA Rating

Health hazard	:	2
Fire hazard	:	2
Reactivity hazard	:	1

2.6 HMIS Rating

Health hazard	:	2
Chronic health hazard	:	*
Reactivity hazard	:	1
Flammability	:	2
Physical hazard	:	0

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Substance	CAS#	EC#	Concentration
Dimethyl sulfoxide M.F: C_2H_6OS M.W: 78.13 g/mol	67-68-5	200-664-3	100%

3.2 Hazardous components & classification

Flam. Liq. 4; H227

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician if symptoms are severe or persistent. Provide this data sheet to medical personnel. If product is spilled or leaked, evacuate area.

In case of inhalation

If inhaled, move person to fresh air and monitor breathing. If not breathing, give artificial ventilation. Consult a physician if symptoms are severe or persistent.

In case of skin contact

Immediately wash with excess soap and water. If spilled on clothing, remove all affected clothing. Consult a physician if symptoms are severe or persistent.

In case of eye contact

Flush eyes with water or eye wash solution as a precaution for 15 minutes. Consult a physician if symptoms are severe or persistent.

In case of ingestion

Only induce vomiting if recommended by medical personnel. If subject is unconscious, do not give anything by mouth. If conscious, rinse mouth with water. Consult a physician if symptoms are severe or persistent.

4.2 Most important symptoms and effects, both acute and delayed

All known important symptoms are described in Section 2 and/or Section 11. No other important symptoms to report.

4.3 Indication of any immediate medical attention and special treatment needed

No special treatment indicated. Provide treatment in accordance with exhibited systems.

SECTION 5: FIREFIGHTING MEASURES

5.1 Suitable extinguishing media

Water spray, alcohol-resistant foam, dry chemical, and carbon dioxide extinguishers are suitable.

5.2 Unsuitable extinguishing media

No known unsuitable extinguishing media.

5.3 Special hazards arising from the substance

Carbon oxides and sulfur oxides may be released under fire conditions.

5.4 Advice for firefighters

Wear protective gear, such as self-contained breathing apparatus, if necessary

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Provide suitable ventilation. Use any necessary personal protective equipment. Avoid contact with skin and eyes, and avoid creation and inhalation of vapor or dust. Keep all unnecessary personnel away.

For personal protection see section 8

6.2 Environmental precautions

Prevent product from entering public sewers and waterways.

6.3 Methods and material for containment and cleaning up

Use inert absorbent material to absorb any spilled or leaked product. Keep in suitable, closed containers for disposal.

For proper disposal see section 13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Provide suitable ventilation. Wear any necessary personal protective equipment.

For precautions see section 2

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions : Store upright, closed container in arid, ventilated environment. Storage class (TRGS 510): 10: Combustible liquids.

Incompatible materials : Acid chlorides, strong acids, strong oxidizing agents, and strong reducing agents are incompatible with this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

DMSO, CAS No.: 67-68-5 TWA: 250 ppm. Basis: USA. Workplace Environmental Exposure Levels (WEEL).

8.2 Engineering controls

Follow good industrial hygiene and safety practices when handling product.

8.3 Personal protective equipment

Eye/face protection	:	Use only government-approved safety glasses with side-shields.
Skin protection	:	Use gloves when handling product. Inspect gloves before use to ensure suitability for use. Remove without exposing skin to the gloves outer surface. Discard used gloves according to all pertinent laws and/or current good practices (cGXP). Wash hands with soap and water.
Body protection	:	Wear appropriate clothing. Ensure clothing is in good condition, with no holes or tears. When selecting clothing, consider the concentration and amount of substance to be handled.
Respiratory protection	:	Use only approved respirators and components which comply with CDC and NIOSH (US) or CEN (EU) regulations. Required only when vapors or aerosols are created.
Control of environmental exposure	:	Prevent product from entering the environment, especially through public sewers or waterways.
General hygiene considerations	:	Comply with general industrial hygiene practice guidelines.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	:	Clear, colorless
b)	Physical states	:	Liquid
c)	Odor	:	Sulfurous
d)	Odor threshold	:	Not available
e)	Melting point	:	16-19°C
f)	Boiling point range	:	189°C
g)	pH	:	Not available
h)	Density	:	Not available
i)	Flash point	:	87°C - closed cup
j)	Evaporation rate	:	Not available
k)	Flammability	:	Not available
l)	Upper/lower flammability or explosive limits:	:	Upper explosion limit: 42 %(V) Lower explosion limit: 3.5 %(V)
m)	Vapor pressure	:	0.55 hPa @ 20°C 4 hPa @ 50°C
n)	Vapor density	:	2.70 - (Air = 1.0)
o)	Relative density	:	1.1 g/mL
p)	Water solubility	:	Completely Miscible
q)	Partition coefficient:n-octanol/water	:	log Pow: -1.349
r)	Autoignition temperature	:	300-302°C

s)	Decomposition temperature	:	> 190°C
t)	Kinematic viscosity	:	Not available
u)	Explosive properties	:	Not explosive
v)	Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
w)	Solubility in other solvents	:	Alcohol - soluble; Diethylether - soluble
x)	Surface tension	:	43.5 mN/m @ 20°C

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No special reactivity is known.

10.2 Chemical stability

Product is stable when stored and used as recommended.

10.3 Stability note(s)

Avoid heat, flames, and sparks around this product.

10.4 Polymerization

No known polymerization.

10.5 Possibility of hazardous reactions

Risk of explosion with: Acetylidene, organic halides, perchlorates, acid chlorides, nonmetallic halides, Iron (III) compounds, Nitrates, Fluorides, Chlorates, hydrides, Perchloric acid, Oxides of phosphorus, Nitric acid, Silver compounds, Silicon compounds, silanes, and acid halides. Exothermic reaction with: Boron compounds, oxyhalogenic compounds, Potassium, Sodium, acid chlorides, Silver salt, Nitrogen dioxide, strong oxidizing and reducing agents, and strong acids. Risk of ignition with: Potassium permanganate.

10.6 Incompatible materials

Acid chlorides, strong acids, strong oxidizing agents, and strong reducing agents are incompatible with this product.

10.7 Hazardous decomposition products

Carbon oxides and sulfur oxides may be released under fire conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Acute toxicity

LD50 Oral	:	Rat - male and female - 28,300 mg/kg (OECD Test Guideline 401)
LD50 Dermal	:	Rat - male and female - 40,000 mg/kg (ECHA)
LC50 Inhalation	:	Rat - male and female - dust/mist - 4 hrs - >5.33 mg/l (OECD Test Guideline 403)

11.2 Skin corrosion/irritation

Rabbit - 4 hrs - slight irritation (OECD Test Guideline 405)

11.3 Serious eye damage/eye irritation

No eye damage/irritation data available.

11.4 Respiratory or skin sensitization

Maximization test: Guinea pig - negative (OECD Test Guideline 406)
Local lymph node assay (LLNA): Mouse - negative (OECD Test Guideline 429)

11.5 Germ cell mutagenicity

Ames test: Salmonella typhimurium - with and without metabolic activation - negative (OECD Test Guideline 471)
Sister chromatid exchange assay: Chinese hamster ovary cells - with and without metabolic activation - negative (OECD Test Guideline 479)
Chromosome aberration test: Chinese hamster ovary cells - with and without metabolic activation - negative (OECD Test Guideline 473)
In vivo mammalian bone-marrow cytogenetic test, chromosomal analysis: Rat - intraperitoneal - negative (OECD Test Guideline 474)

11.6 Carcinogenicity

IARC : Product and components are not regulated by the IARC.

ACGIH : Product and components are not regulated by the ACGIH.

NTP : Product and components are not regulated by the NTP.

OSHA : Product and components are not regulated by OSHA.

11.7 Reproductive toxicity

No reproductive toxicity data available.

11.8 Specific target organ toxicity – single exposure

No specific organ toxicity data available.

11.9 Specific target organ toxicity – repeated exposure

Oral: Rat - male and female - 18 months - NOAEL: 3,300 mg/kg - LOAEL: 9,900 mg/kg
Dermal: Monkey - male and female - 18 months - NOAEL: ≥8,910 mg/kg - LOAEL: 990 mg/kg

11.10 Aspiration hazard

No aspiration hazard data available.

11.11 Additional Information

RTECS: PV6210000
Exposure to large amounts can cause: Redness of skin, Itching, Burning, Sedation, Headache, Nausea, Dizziness
Eyes - Eye disease - Based on Human Evidence

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Species: Fathead Minnow (Pimephales promelas). Exposure: 96 hours. Result: LC50 34000 mg/L
Species: Rainbow Trout (Oncorhynchus mykiss). Exposure: 96 hours. Result: LC50 35000 mg/L.
Species: Water Flea (Daphnia magna). Exposure: 48 hours. Result: EC50 24,600 mg/L (OECD Test Guideline 202)
Species: Green Algae (Pseudokirchneriella subcapitata). Exposure: 72 hours. Result: EC50 17,000 mg/L (OECD Test Guideline 201)
Species: Zebra fish (Danio rerio). Exposure: 96 hours. Result: LC50 >25,000 mg/l (OECD Test Guideline 203)
Species: Activated sludge. Exposure: 30 mins. Result: EC50 10-100 mg/l (ISO 8192)

12.2 Aquatic toxicity

No aquatic toxicity data available.

12.3 Persistence and degradability

Aerobic - 28 days - 31% - Not readily biodegradable (OECD Test Guideline 301D)

12.4 Bioaccumulative potential

No bioaccumulation data available.

12.5 Mobility in soil

No soil mobility data available.

12.6 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment is not required/was not conducted.

12.7 Other adverse effect

Hydrolyses readily in water (-0.12, 1.2 hours @ 30°C)

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Product

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult and adhere to local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

13.2 Packaging

Packaging should be disposed of in the same manner as unused product.

13.3 Recommendation

Disposal must be made according to official regulations.

SECTION 14: TRANSPORTATION INFORMATION

14.1 DOT (US)

NA# 1993
Class: None
Packing Group: III
Proper Shipping Name: Combustible liquid, n.o.s. (Dimethyl sulfoxide).
Poison Inhalation Hazard: No

14.2 IMDG

Not a dangerous good under IMDG regulations.

14.3 IATA

Not a dangerous good under IATA regulations.

SECTION 15: REGULATORY INFORMATION

15.1 SARA

SARA 302: This product and components are not subject to the reporting requirements of SARA Title III, Section 302.
SARA 313: This product does not contain any components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.
SARA 311/312: Fire Hazard, Chronic Health Hazard (Dimethyl sulfoxide CAS No.: 67-68-5)

15.2 Clean water act (CWA)

No chemicals are present in this product that are subject to regulation under the Clean Water Act.

15.3 Right to know components

Massachusetts	:	No chemicals are present which require disclosure under the Massachusetts Right to Know Act.
Pennsylvania	:	No chemicals are present which require disclosure under the Pennsylvania Right to Know Act.
New Jersey	:	No chemicals are present which require disclosure under the New Jersey Right to Know Act.
California proposition 65 components	:	This product contains no chemicals which are known to the State of California to cause cancer, or birth defects or other reproductive harm.

SECTION 16: OTHER INFORMATION

16.1 Disclaimer

This product is offered by bioWORLD for research, laboratory or further manufacturing use. Not for human use or consumption. The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchant-ability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall bio-WORLD.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect,incidental,consequential or exemplary damages, howsoever arising, even if bio-WORLD.com has been advised of the possibility of such damages.

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16.2 Preparation Information

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