

SAFETY DATA SHEET

SECTION 1: Identification of the substance/ mixture and of the company/ undertaking

- a. Product Name : Dimethyl sulfoxide
- Product Number : Q13003, Q13008
- b. Relevant identified uses of the substance or mixture and uses advised against : **Identified uses**
Laboratory chemicals, Manufacture of substances
- c. Manufacturer & Supplier : Aligned Genetics, Inc
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South Korea
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SECTION 2: Hazards identification

a. GHS classification

Classification according to Regulation (EC) No 1272/2008
Not hazardous

b. GHS-Labeling

Labeling according to Regulation (EC) No 1272/2008

Hazard pictograms
None

Signal word
Not hazardous

Hazard statements
Not hazardous

Precautionary statements
Not hazardous

c. Other hazard which do not result in classification

None

SECTION 3: Composition/ Information on ingredients

3b. Mixtures

Component:	DMSO
Synonyms:	Methyl sulfoxide
Formula:	C ₂ H ₆ OS
CAS-No.:	67-68-5
Weight%:	90-100%

SECTION 4: First aid measures

- a. **In case of eye contact**
Flush eyes with water as a precaution.
- b. **In case of skin contact**
Wash off with soap and plenty of water. Consult a physician.
- c. **If inhaled**
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
- d. **If swallowed**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
- e. **General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance.
- f. **Most important symptoms and effects, both acute and delayed**
no data available.
- g. **Indication of any immediate medical attention and special treatment needed**
no data available.

SECTION 5: Firefighting measures

- a. **Suitable extinguishing media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- b. **Specific hazards arising from the chemical**
Carbon oxides, Sulphur oxides.
- c. **Special protective actions for fire-fighters**
Wear self-contained breathing apparatus for firefighting if necessary.
- d. **Further information**
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

- a. **Personal precautions, protective equipment and emergency procedures**
Avoid breathing vapors, mist or gas. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- b. **Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
- c. **Methods and materials for containment and cleaning up**

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in a container for disposal according to applicable laws. Keep in suitable, closed containers for disposal.

d. Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

a. Precautions for safe handling

Avoid breathing vapors, mist or gas. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

b. Conditions for safe storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Store under inert gas. Hygroscopic.

c. Specific end use(s)

no data available.

SECTION 8: Exposure controls/ personal protection

a. Control parameters

Components with workplace control parameters.

b. Appropriate engineering controls

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

c. Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin 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.

Body protection

Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substances at the specific workplace.

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).

Control of Environmental exposure

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

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

a. Appearance	Form: liquid
b. Odor	No data available
c. Odor Threshold	No data available
d. pH	No data available
e. Melting point/freezing point	16-19°C
f. Initial boiling point and boiling range	189°C
g. Flash point	87 °C - closed cup
h. Evaporation rate	No data available
i. Flammability (solid, gas)	No data available
j. Lower explosion limit	Lower explosion limit: 3.5 %(V)
k. Upper explosion limit	Upper explosion limit: 42 %(V)
l. Vapour pressure	0,55 hPa at 20 °C
m. Vapour density	2,70 - (Air = 1.0)
n. Relative density	1.1 g/mL
o. Water Solubility	Completely miscible
p. Partition coefficient: n-octanol / water	log Pow: -2,03
q. Auto-ignition temperature	No data available
r. Decomposition temperature	No data available
s. Viscosity	No data available
t. Explosive properties	No data available
u. Oxidizing properties	No data available

Other safety information

Relative vapour density 2,70 - (Air = 1.0)

SECTION 10: Stability and reactivity

- a. **Stability**
Stable under recommended storage conditions.
- b. **Reactivity**
No data available.
- c. **Possibility of hazardous reactions**
No data available.
- d. **Conditions to avoid**
Heat, flames and sparks.
- e. **Incompatible materials**
Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents, Strong reducing agents.
- f. **Hazardous decomposition products**
Other decomposition products - No data available.

SECTION 11: Toxicological information

- a. **Delayed and immediate effects and also chronic effect from short and long term exposure**

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

Mild skin irritation.

Serious eye damage/eye irritation

No data available.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

Mouse

Lymphocyte

Cytogenetic analysis

Mouse

Lymphocyte

Mutation in mammalian somatic cells

Rat

Cytogenetic analysis

Mouse

DNA damage

Carcinogenicity

Carcinogenicity - Rat – Oral

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Carcinogenicity - Mouse - Oral

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Leukaemia Skin and 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.

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

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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.

Developmental Toxicity - Mouse – Intraperitoneal

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Specific target organ toxicity – single exposure

No data available.

Specific target organ toxicity – repeated exposure

No data available.

Aspiration hazard

No data available.

Additional information

RTECS: PV6210000

SECTION 12: Ecological information**a. Toxicity**

Toxicity to fish	LC50 - <i>Pimephales promelas</i> (fathead minnow)-34.000 mg/l-96 h
Toxicity to daphnia and other aquatic invertebrates	LC50 - <i>Oncorhynchus mykiss</i> (rainbow trout)-35.000 mg/l-96 h EC50 - <i>Daphnia magna</i> (Water flea)-24.600 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	EC50 - <i>Pseudokirchneriella subcapitata</i> (green algae)-17.000 mg/l-72 h (OECD Test Guideline 201)

b. Persistence and degradability

Biodegradability	Result: 31 %-According to the results of tests of biodegradability, this product is not readily biodegradable. (OECD Test Guideline 301D)
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c. Bioaccumulative potential

No data available.

d. Mobility in soil

No data available.

e. Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

f. Other adverse effects

No data available.

SECTION 13: Disposal considerations**a. Disposal methods**

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

b. Contaminates packaging

Dispose of as unused product.

SECTION 14: Transport information

UN number	ADR/RID: -	IMDG: -	IATA: -
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UN proper shipping name	ADR/RID: Not dangerous goods	IMDG: Not dangerous goods	IATA: Not dangerous goods
Transport hazard class(es)	ADR/RID: -	IMDG: -	IATA: -
Packaging group	ADR/RID: -	IMDG: -	IATA: -
Environmental hazards	ADR/RID: no	IMDG Marine pollutant: no	IATA: no
Special precautions for user	No data available		

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

a. Regulation under the Occupational Safety and Health Act

International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors	Neither banned nor restricted
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Restrictions on the marketing and use of certain dangerous substances and preparations	Neither banned nor restricted
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Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals	Neither banned nor restricted
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REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).
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b. Chemical safety assessment

For this product, a chemical safety assessment was not carried out.

SECTION 16: Other information

Further information

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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 applies to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. . Aligned Genetics, Inc. and its Affiliates shall not be held liable for any damage resulting from handling or contact with the above product. See the reverse side of the invoice or packing slip for additional terms and conditions of sale.

End of Safety Data Sheet