1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product name: Ligation Mix 1

Product number: MP0043

Relevant identified uses: This product is for research and development only.

Uses advised against: No information available.

1.2 Details of the supplier of the safety data sheet:

Supplier name: Arc Bio, LLC.

Address: 100 Enterprise Way, Suite A102, Scotts Valley, CA 95066

Contact information: (650) 690-7737

1.3 Emergency telephone number: (510) 590-8012

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS).

This product contains no substances, which at their given concentration, are considered to be hazardous to health.

Label elements:

Label according to Regulation (EC) No 1272/2008 [CLP/GHS]

Appearance: Colorless

Physical state: Liquid

Odor: Mild

Hazard pictograms: None

Supplemental hazard information: 1.12% of the mixture consists of ingredient(s) of unknown toxicity.

Other hazards: No data available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures:

Description of the mixture

The product contains no substances, which at their given concentration, are considered to be hazardous to health.

4. FIRST AID MEASURES

4.1 Description of first aid measures:

General information

Immediate medical attention is required. In case of accident or unwellness, seek medical advice immediately (show instructions for use or safety data sheet if possible). Remove from exposure, lie down/do not breathe dust/fume/gas/mist/vapor/spray.

Following inhalation: Remove to fresh air.

Following skin contact: Wash skin with soap and water.

Following eye contact: Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Following ingestion: Clean mouth with water and consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the physicians: Treat symptomatically.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: CAUTION – use of water spray when fighting fire may be inefficient.

5.2 Special hazards arising from the substance or mixture

No information available.

5.3 Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Ensure adequate ventilation, especially in confined areas.

Protective equipment: Use personal protection recommended in Section 8.

6.2 Environmental precautions

See Section 12 for additional ecological information.

6.3 Methods and material for containment and cleaning up

For containment: Prevent further leakage or spillage if safe to do so.

For cleaning up: Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. This material and its container must be disposed of as hazardous waste.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Protective measures:

Advice on safe handling: Handle in accordance with good industrial hygiene and safety practice.

Storage conditions: Keep/Store in original container.

Storage temperature: ≤ -20°C.

Incompatible materials: Strong oxidizing reagents.

Environmental precautions: Dispose of according to local regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Preventive industrial medical examinations are to be carried out.

8.1 Control parameters

Occupational Exposure Limits:

Chemical name	CAS number	ACGIH TLV	OSHA PEL	NIOSH IDLH
Glycerol	56-81-5	–	TWA: 15 mg/m^3 mist, total particulate TWA: 5 mg/m^3 mist, respirable fraction (Vacated) TWA: 10 mg/m^3 mist, total particulate (Vacated) TWA: 5 mg/m^3 mist, respirable fraction	–

8.2 Exposure controls

Appropriate engineering controls: Showers, eyewash stations.

Personal protective equipment:

Eye/Face protection:

Suitable eye protection – wear safety glasses with side shields (or goggles).

Skin protection:

Hand protection: Wear suitable gloves.

Body protection: Wear suitable protective clothing.

Respiratory protection: Use in well-ventilated areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:

Physical state: Liquid

Color: Colorless

Odor: Mild

Property	Value
pH	No information available
Melting point/freezing point	No information available
Initial boiling point/boiling range	No information available
Flash point	No information available
Evaporation rate	No information available
Flammability (solid, gas)	No information available
Upper/lower flammability or explosive limits	No information available
Upper explosive limits	No information available
Lower explosive limits	No information available
Vapor pressure	No information available
Vapor density	No information available
Relative density	No information available
Solubility (ies)	No information available
Partition coefficient: n-octanol/water	No information available
Auto-ignition temperature	No information available
Decomposition temperature	No information available
Viscosity	No information available
Viscosity, dynamic	No information available
Viscosity, cinematic	No information available
Explosive properties	No information available
Oxidizing properties	No information available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Can react briskly with oxidizers – danger of explosion.

10.4 Conditions to avoid

Incompatible materials, ignition sources, heat.

10.5 Incompatible materials

Strong oxidizing reagents.

10.6 Hazardous decomposition products

Thermal decomposition can lead to release of irritating and toxic gases and vapors. Carbon monoxide, carbon dioxide (CO_2).

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Information on likely routes of exposure:

Inhalation: Avoid breathing vapors or mists. May cause irritation of respiratory tract.

Eye Contact: Redness. May cause slight irritation

Skin Contact: Prolonged contact may cause redness and irritation. Repeated exposure may cause skin dryness or cracking.

Ingestion: May cause drowsiness or dizziness. Ingestion causes burns of upper digestive and respiratory tracts. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache, nausea, and vomiting.

11.2 Substance

Information on toxicity effects:

Symptoms: No information available.

Delayed and immediate effects, as well as chronic effects from short- and long-term exposure:

Skin corrosion/irritation	Mild
Serious eye damage/eye irritation	Mild
Irritation	Mild
Corrosivity	Mild
Sensitization skin	No information available
Respiratory	No information available
Germ cell mutagenicity	No information available
Carcinogenicity	No information available
Reproductive toxicity	No information available
Developmental toxicity	No information available
Teratogenicity	No information available
STOT – single exposure	No information available
STOT – repeated exposure	No information available
Chronic toxicity	No information available
Sub-chronic toxicity	No information available
Target organ effects	Eyes, kidneys, respiratory system, skin
Neurological effects	No information available
Other adverse effects	No information available
Aspiration hazard	No information available

Numerical measures of toxicity:

Product information, 1.12% of the mixture consists of ingredient(s) of unknown toxicity.

The following values are calculated based on chapter 3.1 of the GHS document:

No information available.

12. ECOLOGICAL INFORMATION

In case that test data regarding one endpoint/differentiation exist for the mixture itself, the classification is carried out according to the substance criteria (excluding biodegradation and bioaccumulation). If no test data exist, the criteria for mixture classification has to be used (calculation method); in this case the toxicological data of the ingredients are shown.

12.1 Toxicity

Aquatic toxicity: 0.33061% of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Terrestrial toxicity: No information available.

12.2 Persistence and degradability

No information available.

12.3 Bioaccumulative potential

No information available.

12.4 Mobility in soil

No information available.

12.5 Other adverse effects

Ozone: No information available.

Ozone depletion potential (ODP): No information available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Relevant information: Keep out of sewers, ditches and waterways.

Disposal considerations: Use a licensed professional waste disposal service to dispose of this product. Product maybe dissolved in a combustible solvent or absorbed onto a combustible material and burned by a chemical incinerator.

Contaminated packaging: Empty containers must be triple rinsed prior to disposal.

14. TRANSPORT INFORMATION

14.1 DOT

Not Regulated

14.2 IATA

Not Regulated

15. REGULATORY INFORMATION

15.1 International inventories

TSCA: Complies

Legend:

TSCA – United States Toxic Substances Control Act Section 8(b) inventory

15.2 US Federal Regulations

CWA (Clean Water Act): This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40CFR 122.21 and 40CFR 122.42).

CERCLA: This material, as supplied, does not contain any substances regulated as hazardous sub-stances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40CFR302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

15.3 US State Regulations

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

U.S. State Right-to-Know Regulations

U.S. EPA Label Information:

EPA Pesticide Registration Number: Not applicable. Safety, health and environmental regulations/legislation specific for the substance or mixture.

15.4 EU Regulations

Authorizations and/or restrictions on use:

Authorizations: None

Restrictions on use: None

Restrictions of occupation: None

Other EU regulations: None

15.5 Chemical Safety Assessment

For this substance a Chemical Safety Assessment is not required.

16. OTHER INFORMATION

16.1 General information

NFPA

Health hazards	0
Flammability	0
Physical Hazards	0
Personal Protection	–

HMIS

Health hazards	0
Flammability	0
Physical Hazards	0
Personal Protection	–

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Revision Number: 02

Revision note: SDS is valid for 3 years from revision date.

16.2 Abbreviations and acronyms

None

16.3 Disclaimer

Important: The information in this SDS is provided in good faith based on our knowledge as of the issue date (or subsequent revisions date, if any), and is to be used only as a guide. This SDS does not constitute a guarantee (express or implied) of any kind, and we make no warranties or merchantability or fitness for a particular purpose. This information relates only to the designated product as shipped and may not be valid if the product is used in combination with any other materials or is not used in accordance with our instruction. It is the responsibility of the buyer/user to ensure that its activities comply with all applicable government requirements. Since conditions of use of the product are not under the control of Arc Bio, LLC., it is the duty of the buyer/user to determine the necessary conditions for the safe use of the product. Arc Bio, LLC. will not be liable for any damages resulting from the handling or contact with the product.