

SAFETY DATA SHEET



In accordance with 453/2010 and 1272/2008

(All references to EU regulations and directives are abbreviated into only the numeric term)

Issued 2023-06-05

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade name

**Monogalactosyldiacylglycerol
(MGDG) i MeOH/Chloroform**

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

Identified uses

Laboratory chemicals

Industrial use

1.3. Details of the supplier of the safety data sheet

Company

Larodan AB
Karolinska Institutet Science Park
Retzius väg 8
SE-171 65 SOLNA
Sweden
+46 20 15 22 00
info@larodan.com
www.larodan.com

Telephone

E-mail

Website

1.4. Emergency telephone number

In case of emergency contact toxicological information, emergency tel 112 (within Europe) or 1-800-222-1222 (for USA). For other countries, use the built-in emergency number in your cell phone

For non-emergency poison information, see http://www.who.int/gho/phe/chemical_safety/poisons_centres/en/

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification in accordance with 1272/2008

Flammable liquids (Category 2)

Acute toxicity (Category 3 *dermal*)

Acute toxicity (Category 3 *oral*)

Acute toxicity (Category 3 *vapour*)

Skin Irritant (Category 2)

Irritates eyes (Category 2)

Suspected of causing cancer (Category 2)

Suspected of damaging the unborn child (Category 2 Route unknown)

STOT SE 1; Specific target organ toxicity - single exposure (Category 1)

STOT RE 1; Specific target organ toxicity - repeated exposure (Category 1)

2.2. Label elements

Label information in accordance with 1272/2008

Hazard pictograms



Signal words

Danger

Hazard statements

H225

Highly flammable liquid and vapour

H301

Toxic if swallowed

H311

Toxic in contact with skin

H315	Causes skin irritation
H319	Causes serious eye irritation
H331	Toxic if inhaled
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H361d	Suspected of damaging the unborn child
H370	Causes damage to organs
H372	Causes organs through prolonged or repeated exposure
Precautionary statements	
P201	Obtain special instructions before use
P260	Do not breathe mist, vapours, or spray
P280	Wear protective gloves, protective clothing and eye or face protection
P301+P310	
P304+P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P501	Dispose of contents and container to authorised waste disposal facility

2.3. Other hazards

Not relevant.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

This product consists of a homogeneous liquid mixture.

3.2. Mixtures

Note that the table shows known hazards of the ingredients in a pure form. These hazards are reduced or eliminated when mixed or diluted, see Section 16d.

Constituent	Classification	Concentration
CHLOROFORM		
CAS No 67-66-3 EC No 200-663-8 Index No 602-006-00-4	Acute Tox <i>4oral</i> , Acute Tox <i>3vapour</i> , Skin Irrit 2, Eye Irrit 2, Carc 2, Repr 2 <i>d</i> , STOT RE 1; H302, H315, H319, H331, H335, H351, H361d, H372	60 - 70%
METHANOL		
CAS No 67-56-1 EC No 200-659-6 Index No 603-001-00-X	Flam Liq 2, Acute Tox <i>3dermal</i> , Acute Tox <i>3oral</i> , Acute Tox <i>3vapour</i> , STOT SE 1; H225, H311, H301, H331, H370	30 - 40%
MONOGALACTOSYLDIACYLGLYCEROL (MGDG)		
CAS No 41670-62-6 -		

Explanations to the classification and labelling of the ingredients are given in Section 16e. Official abbreviations are printed in normal font. Text in italics are specifications and/or complement used in the calculation of the hazards of this mixture, see Section 16b

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Generally

Immediately call a POISON CENTER or doctor/physician.

Never leave a injured person alone. Their condition may rapidly worsen, sometimes several hours after the poisoning.

For those providing assistance to an injured person should avoid exposure and if risk of exposure exists, use appropriate respiratory protection.

Upon breathing in

Bring the injured person out into fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult let trained personnel administer oxygen. Let the injured person rest in a warm place with fresh air and seek medical advice immediately.

Upon contact with the eyes

Rinse the eye for several minutes with lukewarm water. Contact a physician.

Upon skin contact

Remove contaminated clothes.

Clean with soap and abundant water. Please contact a doctor.

Upon ingestion

Immediately contact a doctor (Emergency phone 112).

Flush nose, mouth and throat with water.

4.2. Most important symptoms and effects, both acute and delayed

If ingested, it can cause burning pain in mouth and throat as well as cause nausea, vomiting, diarrhoea and abdominal pain. Prolonged or repeated inhalation of vapors in high concentrations may cause permanent damage to the nervous system, including the brain. In case of serious poisoning, the injured need to be subject to medical observation for at least 48 hours, due to the risk of pulmonary oedema. Suspected to be harmful to the unborn child. Suspected of causing cancer. Headache. Vertigo. Blindness. Prolonged inhalation can cause loss of consciousness and/or death.

4.3. Indication of any immediate medical attention and special treatment needed

If the injured person is unconscious or drowsy, place them in the recovery position.

Symptomatic treatment.

When contacting a physician, take this SDS with you.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Recommended extinguishing agents

All normal extinguishing agents may be used.

Unsuitable extinguishing agents

Among common extinguishing agents there are none that are overtly unsuitable.

5.2. Special hazards arising from the substance or mixture

Produces fumes containing harmful gases (carbon monoxide and carbon dioxide) when burning, and, in case of incomplete combustion, aldehydes and other toxic, harmful, irritant or environmentally harmful substances.

Toxic substances can be spread in case of fire.

Note that the extinguishing water may contain toxic substances or other hazardous substances.

Inflammable.

5.3. Advice for fire-fighters

In case of fire use a respirator mask.

When extinguishing a fire, use over-all coverage clothing which protects against toxic substances.

Protective measures should be taken regarding other material at the site of the fire.

Evacuate all not-authorized personnel.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use recommended safety equipment, see section 8.

Do not inhale vapours and avoid contact with skin, eyes and clothes when cleaning up spill.

Ensure good ventilation.

After splashing immediately follow the instructions in section 4.

Switch off equipment which has an exposed flame, glows, or has a heat source of some other kind.

Keep unauthorized and unprotected people at a safe distance.

6.2. Environmental precautions

Avoid discharge into soil, water or sewers.

6.3. Methods and material for containment and cleaning up

Small spills can be wiped up with a cloth or similar. Then flush the spill site with water. Larger spills should first be covered with sand or earth and then be collected. Collected material should be disposed according to Section 13.

After thoroughly removing the spill, clean contaminated surfaces with water.

Do not try to clean up yourself, unless you are properly trained for decontaminating this product.

Residues left behind after cleaning shall be treated as hazardous waste. For further information, contact the local authority sanitation works. Present this safety data sheet.

6.4. Reference to other sections

See section 8 and 13 for personal protection equipment and disposal considerations

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Do not inhale the fumes and avoid exposure to skin, eyes and clothing.
- Take off work clothes and protective gear before meals.
- Do not mix with other products.
- Read and follow the manufacturer's instructions.
- The product should be stored in a manner which prevents hazards to health and the environment. Avoid exposure to humans and animals and do not discharge the product in a sensitive environment.
- Store this product separately from food items and keep it out of the reach of children and pets.
- Do not eat, drink or smoke in premises where this product is stored.
- Work in order to avoid spillage. If spillage does occur, address it immediately in accordance with the directions specified in Section 6 of this safety data sheet.
- Avoid open fire, hot items, sparks or other ignition sources.
- The product must not be left without supervision during handling.
- Wash your hands after using the product.
- Remove clothes which have been splattered.
- Wash contaminated clothing before reuse.
- Handle and open container with care.
- Take precautionary measures against static discharge.

7.2. Conditions for safe storage, including any incompatibilities

- Store in dry and cool area.
- Handle in a fume cupboard or in a space which is equally safe.
- Handle in premises which have modern ventilation standards.
- Store in a location suited for toxic substances, preferably locked.
- An evacuation plan should be available and evacuation routes must not be blocked.
- Emergency showers and eye-rinsing facilities must be available at the workplace.
- Store only in the original package.

7.3. Specific end uses

- See identified uses in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. National limit values, United Kingdom

METHANOL


(TWA) 200 ppm / 266 mg/m³, (STEL) 250 ppm / 333 mg/m³

CHLOROFORM

(WEL TWA): 2 ppm TWA; 9.9 mg/m³ TWA, (WEL STEL): 6 ppm STEL; 29.7 mg/m³ STEL

Other ingredients (cf. Section 3) have no occupational exposure limit values.

8.2. Exposure controls

- For the safety and health protection of workers according to EU directives 89/391, 98/24 and 98/24 and national occupational legislation, measures due to both the physical and general health hazards of this product and the carcinogenic and/or mutagenic properties of any of the ingredients (see Sections 2, 3, 10 and 11) must be considered.
- Use protective glasses, safety goggles, or a visor.
- Use protective gloves of butyl rubber, Viton or fluorine rubber, or get advice from an occupational medical expert about alternative materials. Show this safety data sheet.
- Only under exceptional circumstance shall protective gloves be worn for longer time than one hour. For service work or work lasting more than 30 minutes, choose gloves of high quality (Class 4-6). For work up to 30 minutes use gloves of Class 2. Class 1 gloves are sufficient for up to 10 minutes. The gloves shall cover as much of the forearms as needed for the work.
-  Choose a mechanical wear strength in line with the nature of the work in accordance to this pictogram with four digits that indicate resistance against abrasion, cutting effects, tear and puncture, where 1 is the lowest and 4 or 5 is the best.
- Protect all exposed skin from coming into contact with the product.
- Use proper protective breathing protection.
- A breathing mask of the A filter (brown) type, may be required.
- For limitation of environmental exposure, see Section 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

a) Appearance	Form: liquid Colour: Not indicated
b) Odour	Not applicable
c) Odour threshold	Not applicable
d) pH	Not applicable
e) Melting point/freezing point	Not applicable
f) Initial boiling point and boiling range	Not applicable
g) Flash point	12 °C
h) Evaporation rate	Not applicable
i) Flammability (solid, gas)	Not applicable
j) Upper/lower flammability or explosive limits	Not applicable
k) Vapour pressure	Not applicable
l) Vapour density	Not applicable
m) Relative density	Not applicable
n) Solubility	Not applicable
o) Partition coefficient: n-octanol/water	Not applicable
p) Auto-ignition temperature	Not applicable
q) Decomposition temperature	Not applicable
r) Viscosity	Not applicable
s) Explosive properties	Not applicable
t) Oxidising properties	Not applicable

9.2. Other information

No data available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Not indicated

10.2. Chemical stability

The product is stable at normal storage and handling conditions.

10.3. Possibility of hazardous reactions

No hazardous reactions known during normal use.

10.4. Conditions to avoid

Avoid heat, sparks and open flames.

10.5. Incompatible materials

Avoid contact with acids, bases, transition metals (and salts of transition metals), reducing agents, organic materials and other contaminants.

10.6. Hazardous decomposition products

Carbon monoxide (CO), carbon dioxide (CO₂) and harmful and irritating substances.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

General or unspecific toxicity

This product's main risk is its toxicity.

Note that the product is carcinogenic, or contains carcinogenic substance(s). Note that the product is or contains a substance that is suspected of causing birth defects.

Acute effects

The substance is acutely toxic.

Causes immediate mild poisoning after ingestion. After 6-24 hours stomach pain, nausea, vomiting, lethargy, weaker breathing, visual disturbances, potential blindness and unconsciousness occurs.

Inhalation of fumes may cause malaise, nausea, vomiting and blurred vision. Lethargy occurs after inhaling large quantities, which may lead to unconsciousness.

Can be absorbed through the skin and give the same symptoms as for inhalation.

Repeated dose toxicity

Prolonged exposure to the substance is dangerous.

Repeated or long term inhalation of the product cause damage to central nervous system, liver, kidneys and lungs.

Carcinogenicity

Is suspected to be carcinogenic.

CMR effects

Suspected of causing birth defects.

Sensibilisation

The criteria for classification cannot be considered fulfilled based on available data.

Corrosive and irritating effects

Irritating to eyes and skin.

Synergism and antagonism

No information is available.

Effect on judgement and other psychological effects

Symptoms like alcohol ingestion.

Effect on human microflora

Effects on human micro flora have not been proven, or are negligible.

Relevant toxicological properties**CHLOROFORM**

LC50 rat (Inhalation) 4h = 48 mg/L

LD50 rat (Orally) 24h = 908 mg/kg

METHANOL

LD50 rabbit (Dermally) 24h = 15800 mg/kg dermal

LC50 rat (Inhalation) 4h = 64000 ppmV inhalation

LD50 rat (Orally) 24h = 5628 mg/kg oral

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

METHANOL

LC50 Bluegill (*Lepomis macrochirus*) 96h = 11850 mg/l

EC50 Freshwater water flea (*Daphnia magna*) 48 h = 10000 mg/l

EC50 Algae (*Selenastrum capricornutum*) 72h = 22000 mg/l

CHLOROFORM

Ecotoxicity in water (LC50): 43.8 mg/l 96 h.

EC50 Algae 48h = 950 mg/l

LC50 Daphnia (Water flea) 48 h = 65.7 mg/l

LC50 Fish (Bluegill) 96h = 16.2 ppm

The product is not to be labelled as an environmental hazard. However, it is not inconceivable that large emissions, or repeated small emissions, can have a harmful effect on the environment.

Prevent release on land, in water and drains.

12.2. Persistence and degradability

There is no information regarding persistence or degradability.

12.3. Bioaccumulative potential

There is no information regarding bioaccumulation.

12.4. Mobility in soil

Information about mobility in nature is not available.

12.5. Results of PBT and vPvB assessment

No chemical safety report has been executed.

12.6. Other adverse effects

Data lacking.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste handling for the product

Product as well as packaging must be disposed as hazardous waste.

Not completely empty packaging can contain remnants of dangerous substances and should therefore be handled as hazardous waste according to the above. Completely empty packaging can be recycled.

Avoid discharge into sewers.

Observe local regulations.

Recycling of the product

Empty, rinsed packaging is sent for recycling where practicable.

Residual, old or contaminated product should be disposed of at a waste management facility.

Transportation of waste

Waste class J(1) - Substances classified as harmful or irritating.

SECTION 14: TRANSPORT INFORMATION

This product is only supposed to be transported by road or railway and just the transport regulations ADR/RID thus apply. If other means of transport are to be used, contact the publisher of this safety data sheet.

14.1. UN number

1992

14.2. UN proper shipping name

FLAMMABLE LIQUIDS, TOXIC, N.O.S. (CHLOROFORM, METHANOL)

14.3. Transport hazard class(es)

Class

3+6.1 Flammable liquids, toxic

Classification code (ADR/RID)

FT1: Flammable liquids, toxic

Subsidiary risk (IMDG)

Labels



14.4. Packing group

Packing group: III

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Tunnel restrictions

Tunnel category: D/E.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable

14.8 Other transport information

Transport category: 3; Maximum total quantity per transport unit: 1000 kgs or litres.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Not applicable.

15.2. Chemical safety assessment

Assessment and chemical safety report in accordance with 1907/2006 Annex I has not yet been performed.

SECTION 16: OTHER INFORMATION

16a. Indication of where changes have been made to the previous version of the safety data sheet

Revisions of this document

This is the first version.

16b. Legend to abbreviations and acronyms used in the safety data sheet

Full texts for Hazard Class and Category Code mentioned in section 3

Flam Liq 2	Flammable liquids (Category 2)
Acute Tox 3oral	Acute toxicity (Category 3 oral)
Acute Tox 3vapour	Acute toxicity (Category 3 vapour)
Acute Tox 3dermal	Acute toxicity (Category 3 dermal)
Skin Irrit 2	Skin Irritant (Category 2)
Eye Irrit 2	Irritates eyes (Category 2)
Carc 2	Suspected of causing cancer (Category 2)
Repr 2d	Suspected of damaging the unborn child (Category 2 Route unknown)
STOT SE 1	STOT SE 1; Specific target organ toxicity - single exposure (Category 1)
STOT RE 1	STOT RE 1; Specific target organ toxicity - repeated exposure (Category 1)

Comprehensive definition of the hazards mentioned in Section 2

Flam Liq 2

Flash point < 23 °C and bp > 35 °C; Flammable liquid Category 2

Acute Tox 3dermal

ATE (acute toxicity estimate) 200-1000 mg/kg

Acute Tox 3oral

ATE (acute toxicity estimate) 50-300 mg/kg

Acute Tox 3vapour

ATE (acute toxicity estimate) 2-10 mg/l

Skin Irrit 2

One or more criteria 1-3 for irritation of skin is applicable

Eye Irrit 2

If, when applied to the eye of an animal, a substance produces at least in 2 of 3 tested animals, a positive response of:

- corneal opacity ≥ 1 and/or
- iritis ≥ 1 , and/or
- conjunctival redness ≥ 2 and/or
- conjunctival oedema (chemosis) ≥ 2

calculated as the mean scores following grading at 24, 48 and 72 hours after installation of the test material, and which fully reverses within an observation period of 21 days.

Carc 2

Suspected human carcinogens. The placing of a substance in Category 2 is done on the basis of evidence obtained from human and/or animal studies, but which is not sufficiently convincing to place the substance in Category 1A or 1B, based on strength of evidence together with additional considerations. Such evidence may be derived either from limited (1) evidence of carcinogenicity in human studies or from limited evidence of carcinogenicity in animal studies.

Repr 2d

Reproductive toxicant Category 2 without specification of route: Suspected damage to the unborn child

STOT SE 1

Substances that have produced significant toxicity in humans or that, on the basis of evidence from studies in experimental animals, can be presumed to have the potential to produce significant toxicity in humans following single exposure. Substances are classified in Category 1 for specific target organ toxicity (single exposure) on the basis of:

- (a) reliable and good quality evidence from human cases or epidemiological studies; or
- (b) observations from appropriate studies in experimental animals in which significant and/or severe toxic effects of relevance to human health were produced at generally low exposure concentrations. Guidance dose/concentration values are provided below to be used as part of weight-of-evidence evaluation

STOT RE 1

Substances that have produced significant toxicity in humans or that, on the basis of evidence from studies in experimental animals, can be presumed to have the potential to produce significant toxicity in humans following repeated exposure.

Substances are classified in Category 1 for target organ toxicity (repeat exposure) on the basis of:

- reliable and good quality evidence from human cases or epidemiological studies; or
- observations from appropriate studies in experimental animals in which significant and/or severe toxic effects, of relevance to human health, were produced at generally low exposure concentrations

Explanations of the abbreviations in Section 14

ADR European Agreement concerning the International Transport of Dangerous Goods by Road

RID Regulations concerning the International Transport of Dangerous Goods by Rail

Tunnel restriction code: D/E; Transport by bulk or via tank: Passage forbidden through tunnels of category D and E, Other transportation means: Passage forbidden through tunnels of category E.

Transport category: 3; Maximum total quantity per transport unit: 1000 kgs or litres.

16c. Key literature references and sources for data

Sources for data

Primary data for the calculation of the hazards has preferentially been taken from the official European classification list, 1272/2008 Annex I, as updated to 2015-06-09.

Where such data was lacking, on the second hand the documentation on which this official classification is based was used, e.g. IUCLID (International Uniform Chemical Information Database). On the third hand, information was used from reputable international chemical suppliers, and on the fourth hand from other available information, e.g. safety data sheets from other suppliers or information from non-profit associations, whereby the reliability of the source was judged by an expert. If, in spite of

this, reliable information was not found, the hazards were judged by expert opinions based on the known properties of similar substances, and according to the principles in 1907/2006 and 1272/2008.

Full texts for Regulations mentioned in this Safety Data Sheet

- 453/2010 COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- 1272/2008 REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- 89/391 COUNCIL DIRECTIVE (89/391/EEC) of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work
- 98/24 COUNCIL DIRECTIVE 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC)
- 1907/2006 REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC Annex I

16d. Methods of evaluating information referred to in 1272/2008 Article 9 which was used for the purpose of classification

The calculation of the hazards of this mixture has been performed as an evaluation by applying a weight of evidence determination using expert judgement in accordance with 1272/2008 Annex I, weighing all available information having a bearing on the determination of the hazards of the mixture, and in accordance with 1907/2006 Annex XI.

16e. List of relevant hazard statements and/or precautionary statements

Full texts for hazard statements mentioned in section 3

- H225 Highly flammable liquid and vapour
- H301 Toxic if swallowed
- H302 Harmful if swallowed
- H311 Toxic in contact with skin
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H331 Toxic if inhaled
- H335 May cause respiratory irritation
- H351 Suspected of causing cancer
- H361d Suspected of damaging the unborn child
- H370 Causes damage to organs
- H372 Causes organs through prolonged or repeated exposure

16f. Advice on any training appropriate for workers to ensure protection of human health and the environment

Warning for misuse

This product can cause severe injuries if used improperly. Read and follow carefully the instructions in this safety sheet and other appropriate risk information. At professional use the employer is responsible for the staff being well aware of the risks.

Other relevant information

Editorial information

This safety data sheet has been generated by the program KemRisk®, KemRisk Sweden AB, Teknikringen 10, SE-583 30 Linköping, Sweden.