SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name	**dichloromethane**
Product Catalogue Name	**LT-PERMET-DCM-96**
CAS-No.	75-09-2
Company:	Ludger Ltd Culham Science Centre Abingdon Oxfordshire OX14 3EB
Telephone:	01865 408554
Emergency Telephone:	01865 408554
Email:	info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Skin irritation (Category 2), H315
Eye irritation (Category 2), H319
Carcinogenicity (Category 2), H351
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Signal Word: Warning

Hazard statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.

Precautionary statement(s)

P201	Obtain special instructions before use.
P302 + P352 IF ON SKIN:	Wash with plenty of water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.

Supplemental Hazard Statements

2.3 Other hazard information:
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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances
Synonyms: methylene chloride (DCM)
Formula: CH_2Cl_2
CAS-No. 75-09-2
EC-No. 200-838-9

Component	Classification	Concentration
methylene chloride	Skin Irrit. 2; Eye Irrit. 2; Carc. 2; STOT SE 3; H315, H319, H351, H336 Concentration limits: 20 %: STOT SE 3, H336	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4. FIRST-AID MEASURES

4.1 Description of First Aid Measures

General Advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If Ingested
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

If the skin is exposed
Wash off with soap and plenty of water. Consult a physician.

If eyes are exposed
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If inhaled
If breathed in, move the person into fresh air. If not breathing, give artificial respiration. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and in section 11

4.3 Indication of immediate medical attention and special treatment needed
No data available

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Hydrogen chloride gas

5.3 Advice for Firefighters
Wear a self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.
Evacuate personnel to safe areas.
For personal protection see section 8.

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

6.3 Methods and material for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool place. Keep the container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Heat sensitive. Store under inert gas.
Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end uses
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Component	CAS-No.	Form of exposure	Control parameters	Basis
Methylene chloride	75-09-2	TWA	100 ppm 350 mg/m3	UK. EH40 WEL - Workplace Exposure Limits
	Remarks	Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		

		TWA	100 ppm 353 mg/m3	Commission Directive (EU) 2017/164 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
		Identifies the possibility of significant uptake through the skin Indicative		
		STEL	200 ppm 706 mg/m3	Commission Directive (EU) 2017/164 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
		Identifies the possibility of significant uptake through the skin Indicative		
		STEL	300 ppm 1,060 mg/m3	UK. EH40 WEL - Workplace Exposure Limits
		Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Control parameters	Basis
Dichloromethane	75-09-2	Carbon monoxide	30parts per million	End-tidal breath	UK. Biological monitoring guidance values

Derived No Effect Level (DNEL)

Application Area	Routes of exposure	Health effect	Value
Workers	Inhalation	Acute systemic effects	706 mg/m³
Workers	Inhalation	Long-term systemic effects	353 mg/m³
Workers	Skin contact	Long-term systemic effects	4750mg/kg BW/d
Consumers	Ingestion	Long-term systemic effects	0.06mg/kg BW/d
Consumers	Inhalation	Long-term systemic effects	88.3 mg/m³
Consumers	Skin Contact	Long-term systemic effects	2395mg/kg BW/d
Consumers	Inhalation	Acute systemic effects	353 mg/m³

Predicted No Effect Concentration (PNEC)

Compartment	Value
Soil	0.583 mg/kg
Sea water	0.194 mg/l
Freshwater	0.54 mg/l
Sea sediment	1.61 mg/kg
Fresh Sediment	4.47 mg/kg
Onsite sewage treatment plant	26 mg/l
Aquatic intermittent	0.27 mg/l

8.2 Exposure controls

Appropriate engineering controls
Handle following good industrial hygiene and safety practices. Wash hands before breaks and at the end of the workday.

Personal Protective Equipment

Eye / face protection
Face shield and safety glasses 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 before use. Use proper glove removal technique (without touching the gloves' outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use following applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves must satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Splash contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 148 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC-approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance 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 AXBEK (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).

Thermal hazards
No information is available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: liquid, Colour: colourless
Odour threshold	250 ppm
pH	No data available
Freezing/Melting Point	-97 °C
Initial boiling point and boiling range	39.8 - 40 °C
Flash Point	Not applicable
Evaporation rate	0.71
Flammability	No data available
Upper/lower flammability or explosive limits	Upper explosion limit: 19 %(V) Lower explosion limit: 13 %(V)
Vapour Pressure, Pa at temperature degree C	584 hPa at 25 °C
Relative Density	1.325 g/mL at 25 °C
Solubility in water and	13.2 g/l at 25 °C solvents (mg/l)
Partition coefficient	log Pow: 1.25
Autoignition temperature	605 °C
Decomposition temperature	No data available
Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: 0.42 mPa.s at 25 °C
Explosive properties	No data available
Oxidising properties	No data available

9.2 Other information

Relative vapour density	2.93 - (Air = 1.0)

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.
Contains the following stabiliser(s): 2-Methyl-2-butene (>0.005 - <0.015 %)

10.3 Possibility of Hazardous Reactions
No data available

10.4 Conditions to Avoid
Heat, flames and sparks. Exposure to sunlight.

10.5 Incompatible materials
Alkali metals, Aluminum, Strong oxidizing agents, Bases, Amines, Magnesium, Strong acids and strong bases, Vinyl compounds

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 401)
LC50 Inhalation - Mouse - 4 h - 86 mg/l
Remarks: (ECHA)
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation
Skin - Rabbit
Result: Irritations - 4 h
(OECD Test Guideline 404)
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Serious eye damage/irritation
Eyes - Rabbit
Result: Eye irritation
Remarks: (ECHA)
Risk of corneal clouding.

Respiratory or skin sensitisation
Local lymph node assay (LLNA) – Mouse
Result: negative
(OECD Test Guideline 429)

Germ cell mutagenicity
Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster ovary cells
Result: positive
Ames test
Salmonella typhimurium
Result: positive
OECD Test Guideline 474
Mouse - male and female - Bone marrow
Result: negative
Carcinogenicity
Limited evidence of carcinogenicity in animal studies
Suspected human carcinogens
IARC: 2A - Group 2A: Probably carcinogenic to humans (Methylene chloride)

Carcinogenicity
Limited evidence of carcinogenicity in animal studies
Suspected human carcinogens
IARC: 2A - Group 2A: Probably carcinogenic to humans (Methylene chloride)

Reproductive toxicity
No data available

STOT-single exposure
Inhalation - May cause drowsiness or dizziness. - Central nervous system
Acute oral toxicity - Nausea, Vomiting, Risk of aspiration upon vomiting., Aspiration may cause pulmonary oedema and pneumonitis.
Acute inhalation toxicity - Possible damages: mucosal irritations

STOT-repeated exposure
Inhalation - May cause damage to organs through prolonged or repeated exposure. - Central nervous system
Oral - May cause damage to organs through prolonged or repeated exposure. - Liver, Blood

Aspiration hazard.
No data available

Potential Health Hazards
Corrosive and causes severe burns.

Signs and symptoms of exposure
Repeated dose toxicity - Rat - male and female - Oral - 104 Weeks - No observed adverse effect level - 6 mg/kg
Repeated dose toxicity - Rat - male and female - Inhalation - 104 Weeks
RTECS: PA8050000
Dizziness, Nausea, Vomiting, narcosis, Cough, irritant effects, Unconsciousness, Shortness of breath, respiratory paralysis, somnolence, depressed respiration, CNS disorders, inebriation
Risk of corneal clouding.
The following applies to aliphatic halogenated hydrocarbons in general: systemic effect: narcosis, cardiovascular disorders. Toxic effect on liver, kidneys.
Dichloromethane is metabolized in the body producing carbon monoxide which increases and sustains carboxyhemoglobin levels in the blood, reducing the oxygen-carrying capacity of the blood.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to fish flow-through test LC50 - Pimephales promelas (fathead minnow) – 193.00 mg/l - 96 h
Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates — static test LC50 - Daphnia magna (Water flea) - 27 mg/l - 48 h (US-EPA)

Toxicity to bacteria static test EC50 - activated sludge - 2,590 mg/l - 40 min (OECD Test Guideline 209)

12.2 Persistence and Degradability
Biodegradability — Result: < 26 % - Not readily biodegradable. (OECD Test Guideline 301C)

12.3 Bioaccumulative potential
Bioaccumulation — Cyprinus carpio (Carp) - 6 Weeks

- 250 µg/l(Methylene chloride)
Bioconcentration factor (BCF): 2 - 5.4
(OECD Test Guideline 305)
Cyprinus carpio (Carp) - 6 Weeks
- 25 µg/l(Methylene chloride)
Bioconcentration factor (BCF): 6 - 40
(OECD Test Guideline 305)

12.4. Mobility in soil
No data available

12.5. 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.

12.6. Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Waste material must be disposed of following the Directive on Waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

Contaminated packaging
Dispose of it as an unused product.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: 1593 IMDG: -1593 IATA: 1593

14.2 UN Proper Shipping Name
ADR/RID: DICHLOROMETHANE
IMDG: DICHLOROMETHANE
IATA: Dichloromethane

14.3 Transport hazard class(es)
ADR/RID: 6.1 IMDG: 6.1 IATA: 6.1

14.4 Packing group
ADR/RID: III IMDG: III IATA:III

14.5 Environmental hazards
ADR/RID: No IMDG: marine pollutant: No IATA: No

14.6 Special precautions for user
No data available

SECTION 15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific to the substance or mixture
Methylene chloride CAS-No.: 75-09-2
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations, and articles (Annex XVII)
Paint strippers containing dichloromethane in a concentration equal to or greater than 0,1 % by weight shall not be: (a) placed on the market for the first time for supply to the general public or professionals after 6 December 2010; (b) placed on the market for supply to the general public or professionals after 6 December 2011; (c) used by professionals after 6 June 2012.
See Commission Regulation (EU) No 276/2010 for Conditions of restriction.

15.2 Chemical Safety Assessment
A Chemical Safety Assessment has been carried out for this substance.

SECTION 16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
H351 Suspected of causing cancer.

The advice offered is derived from the currently available information on the hazardous materials in this product and its component(s). Consideration has been made regarding the quantities offered in the pre-dispensed container. The advice offered is, therefore not all-inclusive nor should it be taken as the descriptive of the compound generally.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name	**dimethyl sulfoxide**
Product Catalogue Name	**LT-PERMET-DMSO-96**
CAS-No.	**67-68-5**
Company:	Ludger Ltd Culham Science Centre Abingdon Oxford OX14 3EB
Telephone:	01865 408554
Emergency Telephone:	01865 408554
Email:	info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No. 1272/2008 [EU-GHS-CLP]
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008 [EU-GHS-CLP].

2.2 Label elements
The product is not required to be labelled following EC directives or respective national laws.
Signal Word: None
Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

Hazard Statement(s)
None

Precautionary Statement(s)
None

2.3 Other hazard information:
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. Rapidly absorbed through the skin.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances

Synonyms:	DMSO methyl sulfoxide dimethyl sulfoxide
Formula:	C_2H_6OS
Molecular Weight:	78.13g/mol

Component		**Concentration**
Name	Dimethyl Sulfoxide	< = 100%
CAS-No.	67-68-5	

EC-No.	200-664-3	

SECTION 4. FIRST-AID MEASURES

4.1 Description of First Aid Measures

General Advice
Consult a physician if exposure causes ill effects and if in any doubt. Show this safety data sheet to the physician/ first responder in attendance.

If Ingested
After swallowing: make the victim drink water (two glasses at most). Consult the doctor if feeling unwell.

If the skin is exposed
Wash off with plenty of soap and water.

If eyes are exposed
Flush eyes with plenty of water/ eye wash solution as a precaution.

If inhaled
Move effect person to fresh air. If not breathing give artificial respiration.

4.2 Most important symptoms and effects, both acute and delayed
Effects due to ingestion may include Nausea, Fatigue and Headache.

4.3 Indication of immediate medical attention and special treatment needed
No data available.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Small fires: Use extinguishing media such as “alcohol” foam, dry chemicals or carbon dioxide.
Large fires: Use extinguishing media such as water, from a faraway distance as possible. Use very large quantities of water as mist or spray to flood the fire and the combustible material. Cool all affected containers with large quantities of water.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Sulphur oxides

5.3 Advice for Firefighters
Wear self-contained breathing apparatus for firefighting, if necessary, to spray cool water on any unopened containers near the fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid breathing vapours, gas or mist. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental Precautions
Prevent further leakage or spillage if safe to do so, e.g. with spill mats. Do not let the product enter drains.

6.3 Methods and material for containment and cleaning up
Contain the spillage and put the collected material into a suitable container with a secure lid. Wash the area well, do not let run off into the drains, collect as waste.

6.4 Reference to other sections
See section 13 for disposal of waste material(s).

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid inhalation of vapour or mist. Keep away from sources of ignition- No smoking.
Take measures to prevent the build-up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool place. Keep the container closed in a dry well-ventilated place.

7.3 Specific end uses
No data available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters.
Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls
Handle following good laboratory hygiene and safety practices. Wash hands before breaks and at the end of the day.

Personal Protective Equipment
Eye / face protection
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, which should be inspected before use. Use proper glove removal technique (removal without the outside of the glove touching the skin) to avoid contact with the skin/chemical. Dispose of contaminated gloves as Laboratory waste following applicable laws and good laboratory practices. Wash and dry hands.
Gloves should be of the standard that will stratify the specifications of EU directive 89/696/EEC and the standard EN 374 derived from it.

Body Protection
The type of protective clothing must be selected according to the amount of substance at the specific workplace being used. Impervious coats or laboratory coats.

Respiratory protection
Use substance in an operation fume hood/ outside venting extraction cupboard. Wear full face respirator if appropriate to use, must be tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: Liquid, clear Colour: Colourless
Odour	No data available

Odour threshold	No data available
pH	No data available
Freezing/Melting Point	Melting point/range: 16-19°C
Initial boiling point and boiling range	189°C
Flash Point	87°C – Closed cup
Evaporation rate	No data available
Flammability	No data available
Upper/lower flammability or explosive limits	Upper explosion limit: 42% (V) Lower explosion limit: 3.5% (V)
Vapour Pressure, Pa at temperature degree C	0.55hPa at 20°C
Relative Density	1.1g/mL
Solubility in water and solvents	Completely miscible
Partition coefficient: n-octanol/water	log Pow: - 2.03
Auto ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidising properties	No data available

9.2 Other information
No data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of Hazardous Reactions
No data available

10.4 Conditions to Avoid
Heat, flames and sparks

10.5 Incompatible materials
Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents and strong reducing agents.

10.6 Hazardous decomposition products
Other decomposition products – No data available

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity
LD50 Oral - Rat - male and female - 28,300 mg/kg (OECD Test Guideline 401)
LC0 Inhalation - Rat - male and female - 4 h - > 5.33 mg/l (OECD Test Guideline 403)
LD50 Dermal - Rat - male and female - 40,000 mg/kg Remarks: (ECHA)

Skin corrosion/irritation
Skin - Rabbit Result: slight irritation - 4 h (OECD Test Guideline 404)

Serious eye damage/irritation
Eyes - Rabbit Result: slight irritation - 24 h (OECD Test Guideline 405)

Respiratory or skin sensitisation
Maximization Test - Guinea pig Result: negative (OECD Test Guideline 406)
Local lymph node assay (LLNA) - Mouse Result: negative (OECD Test Guideline 429)

Germ cell mutagenicity
Ames test Salmonella typhimurium Result: negative sister chromatid exchange assay
Chinese hamster ovary cells Result: negative Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster ovary cells Result: negative OECD Test Guideline 474 Rat - male and female Result: negative

Carcinogenicity
Carcinogenicity – Rat – Oral
Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Others: Tumors.

Carcinogenicity – Mouse – Oral
Tumorigic: Equivocal tumorigenic agent by RTECS criteria. Lukaemia skin and appendages: Other: Tumors.

IARC: No component of this product presents 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
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: Fetoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: Musculoskeletal system.

Reproductive toxicity – Mouse – Intraperitoneal
Effects on embryo or fetus: Fetoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: Musculoskeletal system.

STOT-single exposure
No data available

STOT-repeated exposure
No data available

Aspiration hazard.
No data available

Potential Health Hazards

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through the skin. May cause skin irritation.
Eyes	May cause eye irritation.
Aggravated Medical Condition	Avoid contact with DMSO solutions containing toxic materials or materials with unknown toxicological properties. Dimethyl sulfoxide is readily absorbed through the skin and may carry such materials into the body.

Signs and symptoms of exposure
Effects due to ingestion may include; Nausea, Fatigue, and Headache.

Additional Information
RTECS: PV6210000

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to Fish	LC50-Pimephales promelas (fathead minnow) – 34,000mg/l - 96h LC50-Oncorhynchus mykiss (rainbow trout) – 34,000mg/l-96h
Toxicity to daphnia and other Aquatic invertebrates	EC50-Daphnia pulex (water fleas) – 27,500mg/l
Toxicity to algae	EC50-Lepomis macrochirus (bluegill) - >400,000mg/l-96h

12.2 Persistence and Degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4. Mobility in soil
No data available

12.5. Results of PBT and vPvB assessment
No data available

12.6. Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber or be disposed of by a licensed professional waste disposal company.

Contaminated packaging
Dispose of it as an unused product.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: - IMDG: - IATA: -

14.2 UN Proper Shipping Name
ADR/RID: Not Dangerous Goods
IMDG: Not Dangerous Goods
IATA: Not Dangerous Goods

14.3 Transport hazard class (es)
ADR/RID: - IMDG: - IATA: -

14.4 Packing group
ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards
ADR/RID: No IMDG Marine pollutant: No IATA: No

14.6 Special precautions for user
No data available

SECTION 15. REGULATORY INFORMATION

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

15.1. Safety, health and environmental regulations/legislation specific to the substance or mixture
No data available

15.2 Chemical Safety Assessment
No data available

Please note that the label elements that used to go in Section 15 are now in Section 2.

SECTION 16. OTHER INFORMATION

The advice offered is derived from the currently available information on the hazardous materials in this product and its component(s). Consideration has been made regarding the quantities offered in the pre-dispensed container. The advice offered is, therefore not all-inclusive nor should it be taken as the descriptive of the compound generally.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name	**96 well permethylation plate containing sodium hydroxide**
Product Catalogue Name	**LT-PERMET-PLATE-96**
CAS-No.	1310-73-2
Company:	Ludger Ltd Culham Science Centre Abingdon Oxfordshire OX14 3EB
Telephone:	01865 408554
Emergency Telephone:	01865 408554
Email:	info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Corrosive to metals (Category 1), H290
Skin corrosion (Sub-category 1A), H314
Eye irritation (Category 2), H319
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Signal Word: Danger

Hazard Statement(s)

Hazard statement(s)	
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.

Precautionary statement(s)

Supplemental Hazard Statements	None
P260	Do not breathe dust or mist.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Immediately remove all contaminated clothing. Rinse skin with water.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

rinsing.

Precautionary Statement(s)
None

2.3 Other hazard information:
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.
section.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances
Synonyms: caustic soda
Formula: NaOH
Molecular Weight: 40.00 g/mol
CAS-No. 1310-73-2
EC-No. 215-185-5

Component	Classification	Concentration
sodium hydroxide	Met. Corr. 1; Skin Corr.1A; Eye Irrit. 2; H290, H314, H319 Concentration limits: >= 5 %: Skin Corr. 1A, H314; 2 - < 5 %: Skin Corr. 1B, H314; 0.5 - < 2 %: Skin Irrit. 2, H315; 0.5 - < 2 %: Eye Irrit. 2, H319; >= 1 %: Met. Corr. 1, H290;	

SECTION 4. FIRST-AID MEASURES

4.1 Description of First Aid Measures

General Advice
Consult a physician if exposure causes ill effects and if in any doubt. Show this safety data sheet to the physician/ first responder in attendance.

If Ingested
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

If the skin is exposed
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

If eyes are exposed
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If inhaled
If breathed in, move the person into fresh air. If not breathing, give artificial respiration. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and in section 11

4.3 Indication of immediate medical attention and special treatment needed
No data available.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Sodium oxides

5.3 Advice for Firefighters
Wear a self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental Precautions
Prevent further leakage or spillage if safe to do so. Do not let the product enter drains. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid inhalation of vapour or mist. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool place. Keep the container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): Non-combustible, corrosive hazardous materials

7.3 Specific end uses
Apart from the uses mentioned in section 1.2, no other specific uses are stipulated

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Component	CAS-No.	Form of exposure	Control parameters	Basis
Sodium hydroxide	1310-73-2	STEL	2 mg/m3	UK. EH40 WEL - Workplace Exposure Limits

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Inhalation	Long-term local effects	1 mg/m3
Consumers	Inhalation	Long-term local effects	1 mg/m3

8.2 Exposure controls

Appropriate engineering controls
Handle following good industrial hygiene and safety practices. Wash hands before breaks and at the end of the workday.

Personal Protective Equipment

Eye / face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). 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 before use. Use proper glove removal technique (without touching the gloves' outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use following applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)
SIGALD- S8045 Page 5 of 17
data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE-approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance 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).

Thermal hazards
No information is available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: pellet, Colour: white
Odour threshold	No data available
pH	ca.> 14 at 100 g/l at 20 °C
Freezing/Melting Point	Melting point/range: 318 °C
Initial boiling point and boiling range	1,390 °C at 1,013 hPa
Flash Point	Not applicable
Evaporation rate	No data available
Flammability	No data available
Upper/lower flammability or explosive limits	No data available
Vapour Pressure, Pa at temperature degree C	< 24 hPa at 20 °C 4.00 hPa at 37 °C
Relative Density	2.13 g/cm3 at 20 °C
Solubility in water and solvents (mg/l)	1,090 g/l at 20 °C
Partition coefficient	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidising properties	No data available

9.2 Other information

Relative vapour density	1.38 - (Air = 1.0)

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions
No data available

10.4 Conditions to Avoid
No data available

10.5 Incompatible materials
Water, acids, Organic materials, Chlorinated solvents, Aluminium, Phosphorus, Tin/tin oxides, Zinc.

10.6 Hazardous decomposition products
Other decomposition products –
Hazardous decomposition products formed under fire conditions. - Sodium oxides: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Causes burns.
Remarks: (Regulation (EC) No 1272/2008, Annex VI).

Serious eye damage/irritation
Eyes - Rabbit
Result: Causes serious eye damage
(OECD Test Guideline 405)
Remarks: (Regulation (EC) No 1272/2008, Annex VI)
Causes serious eye damage.

Respiratory or skin sensitisation
Patch test: - In vitro study
Result: negative
Remarks: (ECHA)

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: No ingredient 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
No data available

Specific target organ toxicity - single exposure
No data available
Acute oral toxicity - If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
Acute inhalation toxicity - burns of mucous membranes, Cough, Shortness of breath,
Possible damages: damage to the respiratory tract

STOT-repeated exposure
No data available

Aspiration hazard.
No data available

Potential Health Hazards
Corrosive and causes severe burns.

Signs and symptoms of exposure
RTECS: WB4900000

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Other dangerous properties can not be excluded.
Handle following good industrial hygiene and safety practices.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish LC50	Gambusia affinis (Mosquito fish) - 125 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia - 40.38 mg/l - 48 h

12.2 Persistence and Degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4. Mobility in soil
No data available

12.5. Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6. Other adverse effects
Harmful to aquatic life.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of it as an unused product.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: 1824 IMDG: - IATA: 1824

14.2 UN Proper Shipping Name

ADR/RID:	sodium hydroxide solid
IMDG:	sodium hydroxide solid
IATA:	sodium hydroxide solid

14.3 Transport hazard class(es)
ADR/RID: 8 IMDG: 8 IATA: 8

14.4 Packing group

ADR/RID: II	IMDG: II	IATA:II

14.5 Environmental hazards

ADR/RID: No	IMDG: marine pollutant: No	IATA: No

14.6 Special precautions for user

No data available

SECTION 15. REGULATORY INFORMATION

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

No data available.

15.2 Chemical Safety Assessment

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

SECTION 16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation
Met. Corr.	Corrosive to metals
Skin Corr.	Skin corrosion

The advice offered is derived from the currently available information on the hazardous materials in this product and its component(s). Consideration has been made regarding the quantities offered in the pre-dispensed container. The advice offered is, therefore not all-inclusive nor should it be taken as the descriptive of the compound generally.