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

Product Name	**2AA Dye**
Product Catalogue Name	**LT-2AA-01/02/03**
CAS-No.	**118-92-3**
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]
Serious eye damage (Category 1)

2.2 Label elements

Signal Word: Warning

Hazard Statement(s)

H318	Serious eye damage
H319	Causes serious eye irritation.

Precautionary Statement(s)

P280	Wear eye protection/ face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

2.3 Other hazard information:
None

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances

Synonyms:	anthranilic acid 2-aminobenzoic acid

Formula: $C_7H_7NO_2$
Molecular weight: 137.14 g/mol

Component		Concentration
Name	2-AA Dye	< = 100%
CAS-No.	118-92-3	
EC-No.	204-287-5	

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
Rinse mouth well with water. Never give anything by mouth if the person has lost consciousness. Consult a physician.

In case of skin contact
Wash well with soap and water. Consult a physician.

If eyes are exposed
Rinse well with water/ eye wash solution for at least 15 minutes. Consult a physician. Show this safety data sheet to the physician/ first responder in attendance.

If inhaled
Move the affected person(s) into fresh air. If not breathing, give artificial respiration. Consult a physician.

If swallowed
After swallowing: immediately make the victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

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, and dry chemical or carbon dioxide extinguishers.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, nitrogen oxides (NOx).

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

5.4 Further information
No data available

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear personal protective clothing when handling the chemical. Avoid dust formation. Avoid breathing in vapours, mist, dust or gas when clearing the chemical, work in a well-ventilated area.

6.2 Environmental Precautions
Prevent any further leaking / spillage if possible. Do not let the chemical enter the drainage system and discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up
Gently sweep the chemical, do not create dust, and put it into a suitable container with a lid. Seal the container and arrange disposal.

6.4 Reference to other sections
See section 13 for information on the disposal of the chemical.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes and the formation of dust and aerosols. Provide appropriate exhaust ventilation when handling the chemical, if dust can be formed.

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

7.3 Specific end uses
No data are available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

8.2 Exposure controls
Appropriate engineering controls
General advice is to always wear PPE when handling the chemical, following good laboratory practice. Wash hands after the removal of gloves.

Personal Protective Equipment
Eye/face protection
Safety glasses with side shields conforming to UN166. To have available equipment tested and approved under appropriate government standards such as NIOSH(US) or EN 166 (EU).

Skin protection
Handle with gloves. Following good laboratory practice the gloves should be checked for tears before use and proper glove removal techniques should be used when removing them. Dispose of used gloves as contaminated chemical waste. Wash and dry hands.
Gloves should be of the standard to satisfy the specifications of EU directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection
Laboratory coat or a similar covering.

Respiratory protection
If under extraction none is required.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: Solid
Odour	No data available
Odour threshold	No data available
pH	No data available
Freezing/Melting Point	Melting point/range: 144-148°C – lit.
Initial boiling point and boiling range	No data available
Flash Point	No data available
Evaporation rate	No data available
Flammability	No data available
Upper/lower flammability or explosive limits	No data available
Vapour Pressure	No data available
Relative Density	No data available
Solubility in water and solvents (mg/l)	No data available
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
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. The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

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

10.3 Possibility of Hazardous Reactions
Violent reactions are possible with Strong oxidizing agents and Strong bases

10.4 Conditions to Avoid
No data available

10.5 Incompatible materials
Strong oxidising 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 – 5,410 mg/kg
Remarks: Behavioural: Somnolence (general depressed activity), excitement and ataxia.
LC50 Inhalation – rat – 4h - >5.3mg/L

Skin corrosion/irritation
Skin – rabbit – No skin irritation.

Serious eye damage/irritation
Eyes – rabbit – Moderate eye irritation.

Respiratory or skin sensitisation
No data are available.

Germ cell mutagenicity
Genotoxicity in vitro – Not mutagenic in Ames test.
Histidine reversion (Ames)

Genotoxicity in vitro – Human – lymphocyte.
Mutation in mammalian somatic cells.

Genotoxicity in vivo – mouse – Intraperitoneal.
Sister chromatid exchange.

Carcinogenicity
Carcinogenicity – rat – Oral
Tumorigenic: Equivocal Tumorigenic agent by RTECS criteria. Kidney, Ureter, Bladder: Tumors
Carcinogenicity – mouse – Subcutaneous
Tumorigenic: Equivocal Tumorigenic agent by RTECS criteria. Lungs, Thorax or respiration: Bronchiogenic carcinoma. Liver: tumors.
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP or EPA classification.
IARC: 3 – Group 3: Not classifiable as to its carcinogenicity to humans (anthranilic acid)

Reproductive toxicity
Reproductive toxicity – mouse – Oral
Effects on fertility: Female fertility index (e.g. # females pregnant per # sperm-positive females; # females pregnant per # females mated).

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 Cause serious eye irritation.

Signs and symptoms of exposure
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: CB2450000

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 – Pimephales promelas (Fathead minnow) – 97 mg/l – 96h
Toxicity to daphnia and other aquatic invertebrates.	EC50 – Daphnia magna (Water flea) – 85.7 mg/l – 48h
Toxicity to algae	EC50 – Desmodesmus subspicatus (Green algae) – 31.3 mg/l – 72h

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
Harmful to aquatic life. No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
Waste can be burnt in a chemical incinerator equipped with an afterburner and scrubbers when first dissolved in a solvent, if impractical, seek a licensed disposal company for the disposal of waste materials.

Contaminated packaging
Treat packaging as an unused product and dispose of it with a licensed waste disposal company.

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 THE COMPANY / UNDERTAKING

Product Name	**Acetic Acid / dimethyl sulfoxide solution**
Product Catalogue Name	**LT-ACETIC-DMSO-01/96**
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]
Flammable liquids (Category 3)
Skin corrosion (Category 1A)

2.2 Label elements

Signal Word: Danger

Hazard Statement(s)

H226	Flammable liquid and vapour
H314	Causes severe skin burns and eye damage.

Precautionary Statement(s)

P280	Wear proactive gloves/ protective clothing/ eye protection/ face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and safe to do so. Continue rinsing.
P310	Immediately call a POISON CENTRE or doctor/ physician.

2.3 Other hazard information:
None

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances

Synonyms:	DMSO, methyl sulfoxide, dimethyl sulfoxide Glacial acetic acid
Formula:	DMSO: C_2H_6OS

Molecular Weight: Acetic Acid: $C_2H_4O_2$
DMSO: 78.13 g/mol
Acetic Acid: 60.05 g/mol

Component		Concentration
Name	Dimethyl Sulfoxide	70%
CAS-No.	67-68-5	
EC-No.	200-664-3	
Name	Acetic Acid	30%
CAS-No.	64-19-7	
EC-No.	200-580-7	
Index-No.	607-002-00-6	

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. Rinse mouth well with water. Never give anything by mouth to an unconscious person.

If the skin is exposed
Remove all contaminated clothing immediately; wash the area well with plenty of soap and water.

If eyes are exposed
Flush eyes with plenty of water/ eye wash solution for at least 15 minutes, if present and safe to do so, remove contact lenses and continue rinsing.

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
Nausea, Fatigue and Headache. To our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

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, and collect it 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.

ACETIC ACID

CAS-No.	Value	Control Parameters	Update	Basis
64-19-7	TWA	10ppm 25mg/m3	1991-07-05	Europe. Commission Directive 91/322/EEC on establishing indicative limits on values.
Remarks	Indicative			

DMSO 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 a full-face respirator if appropriate to use, and it 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	Strong
Odour threshold	No data available
pH	No data available
Freezing/Melting Point	No data available
Initial boiling point and boiling range	No data available
Flash Point	No data available
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	No data available
Relative Density	No data available
Solubility in water and solvents	Completely miscible
Partition coefficient: n-octanol/water	No data available
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
No data available
10.2 Chemical stability
No data available

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 oxidizing agents and strong reducing agents, soluble carbonates and phosphates, hydroxides, metals, peroxides, permanganates, e.g. potassium permanganate, Amines, and Alcohols.

10.6 Hazardous decomposition products
Other decomposition products – No data available

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
DMSO
Acute toxicity
LD50 Oral – Rat – 14,500mg/kg
LC50 Inhalation – Rat – 4h – 40250ppm
LD50 Dermal – Rabbit - > 5,000mg/kg

Acetic Acid
Acute toxicity
LD50 Oral – Rat – 3,310 mg/kg
LC50 Inhalation – Mouse – 1h - 5620ppm
Remarks: Sense Organs and Special Senses (Nose, Eyes, Ears and Taste): Eyes: Conjunctive irritation. Eyes: Other. Blood: Other changes.
LD50 Dermal – Rabbit – 1,112 mg/kg

DMSO
Skin corrosion/irritation
Skin – Rabbit – No skin irritation – 4h

Acetic Acid
Skin corrosion/irritation
Skin – Rabbit – Mild skin irritation – 24h

DMSO
Serious eye damage/irritation
Eyes – Rabbit – Mild eye irritation

Acetic Acid
Serious eye damage/irritation
Eyes – Rabbit – Corrosive to eyes.

Respiratory or skin sensitisation
May cause sensitization by skin contact.

Germ cell mutagenicity
Genotoxicity in vitro – Mouse – lymphocyte
Cytogenetic analysis
Genotoxicity in vitro – Mouse – lymphocyte
Mutation in mammalian somatic cells

Genotoxicity in vivo – Rat – Intraperitoneal
Cytogenetic analysis

Genotoxicity in vivo - Mouse – Intraperitoneal
DNA damage

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

Carcinogenicity – Mouse – Oral
Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Leukaemia skin and appendages: Other: Tumours.

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
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	Harmful if inhaled. Causes serious respiratory tract irritation.
Ingestion	Harmful if swallowed. Causes burns.
Skin	May be harmful if absorbed through the skin. Causes skin burns.
Eyes	Causes eye irritation/ burns.
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
Nausea, Fatigue, Headache. To our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: PV6210000
RTECS: AF1225000

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

DMSO	
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
Acetic Acid	
Toxicity to Fish	LC50 – Leuciscus idus (Golden Orfe) – 410.00mg/l – 48h LC50 – Cyprinus carpio (Carp) – 49.00mg/l – 48h LC50 – Pimephales promelas (Fathead minnow) – 79.00 - 88.00mg/l – 96h LC50 – Lepomis macrochirus – 75mg/l – 96h
Toxicity to Daphnia and other aquatic invertebrates.	EC50 – Daphnia magna (Water flea) – 65.00mg/l – 48h

12.2 Persistence and Degradability
Biodegradability
Remarks: Expected to be biodegradable.

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
Biochemical Oxygen Demand (BOD) - 880mg/g

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

DMSO	ADR/RID: -	IMDG: -	IATA: -
Acetic Acid	ADR/RID: 2789	IMDG: 2789	IATA: 2789

14.2 UN Proper Shipping Name

DMSO	ADR/RID:	Not Dangerous Goods
	IMDG:	Not Dangerous Goods
	IATA:	Not Dangerous Goods
Acetic Acid	ADR/RID:	ACETIC ACID, GLACIAL
	IMDG:	ACETIC ACID, GLACIAL
	IATA:	Acetic Acid, glacial

14.3 Transport hazard class (es)

DMSO	ADR/RID: -	IMDG: -	IATA: -
Acetic Acid	ADR/RID: 8 (3)	IMDG: 8 (3)	IATA: 8 (3)

14.4 Packing group

DMSO	ADR/RID: -	IMDG: -	IATA: -
Acetic Acid	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

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	**2-Picoline Borane**
Product Catalogue Name	**LT-PB-01/96**
CAS-No:	**3999-38-0**
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]
Substances, which in contact with water, emit flammable gases (Category 2)
Skin irritation (Category 2)
Eye irritation (Category 2)
Specific target organ toxicity – Single exposure (Category 3), respiratory system

2.2 Label elements

Signal Word: Danger

Hazard Statement(s)

H261	In contact with water, releases flammable gas.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

Precautionary Statement(s)

P231+P232	Handle under inert gas. Protect from moisture.
P261	Avoid breathing dust/ fume/gas/mist/vapours/spray.
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 so. Continue rinsing.

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: 2-picoline borane complex
2-Methylpyridine borane complex

Formula: $C_6H_{10}NB$
Molecular Weight: 106.96 g/mol

Component	Classification	Concentration
Name 2-picoline borane complex	Water-reac, 2; Skin Irrit. 2; Eye Irrit.2; STOT SE 3; H261, H315, H319, H335	100%
CAS-No. 3999-38-0		

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
Never give anything by mouth to an unconscious person. Rinse mouth well with water.

If the skin is exposed
Wash the area well with soap and water. Consult a physician.

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

If inhaled
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)

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

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use a dry chemical extinguisher, as it is the only suitable extinguishing media. Do NOT use a water jet.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, nitrogen oxides (NOx), Borane/ boron oxides.

5.3 Advice for Firefighters
Fire fighters must wear self-contained breathing apparatus if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation in work areas. Evacuate personnel to safe areas to avoid breathing dust.

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

6.3 Methods and material for containment and cleaning up
Carefully sweep up the spill without creating any dust. Contain the collected material in a sealed suitable container, to await disposal. DO NOT USE WATER IN THE CLEANING PROCESS.

6.4 Reference to other sections
Please refer to section 13 for the disposal of products and spills.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid the formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dark place. Keep the container tightly 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 and safety practices. Wash hands before entering the laboratory and at the end of the workday/ when finished handling the material.

Personal Protective Equipment

Eye / face protection
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 wearing gloves. Gloves must be inspected before use. Use proper glove removal technique (without the glove touching the skin) to avoid skin contact with the product. Dispose of contaminated gloves as chemical dry waste following applicable laws and good laboratory practices. Wash and dry your hands. Gloves must satisfy the specifications of EU directive 2016/425 and the standard EN 374 derived from it.

Body Protection
Laboratory coat or other types of body covering suitable for use in a laboratory.

Respiratory protection
When used under an operational fume hood no special protection is required. If required use respirators and components tested and approved under government standards such as NIOSH (US) or CEN (EU). Required level for nuisance exposure P98 (US) or P1 (EU EN 143), higher levels of protection OV/AG/P99 (US) or ABEK-P2 (EU EN 143).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: Solid Colour: White
Odour	No data available
Odour threshold	No data available
pH	No data available
Freezing/Melting Point	Melting point/ range: 44 - 46°C – lit.
Initial boiling point and boiling range	No data available
Flash Point	100°C – closed cup
Evaporation rate	No data available
Flammability	No data available
Upper/lower flammability or explosive limits	No data available
Vapour Pressure	No data available
Relative Density	No data available
Solubility in water and solvents (mg/l)	No data available
Partition coefficient: n- Octanol/water	No data available
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
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions
Reacts violently with water.

10.4 Conditions to Avoid
Exposure to moisture.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx), Borane/boron oxides.

Other decomposition products - No data available.
In the event of fire: see section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity
No data available

Skin corrosion/irritation
No data available

Serious eye damage/irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: No components 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

STOT-single exposure
Inhalation – May cause respiratory irritation.

STOT-repeated exposure
No data available

Aspiration hazard.
No data available

Signs and symptoms of exposure
To the best of our knowledge the chemical, physical and toxicological properties have not been thoroughly investigated.

Additional Information
RTECS: Not available

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

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
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
Contact a licensed waste disposal service to collect/dispose of any waste material. The company should be advised of the nature of the substance, Highly Flammable.

Contaminated packaging
Treat it as an unopened/ unused product.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: 2813 IMDG: 2813 IATA: 2813

14.2 UN Proper Shipping Name
ADR/RID: WATER-REACTIVE SOLID, N.O.S. (2-Picoline borane complex)
IMDG: WATER-REACTIVE SOLID, N.O.S. (2-Picoline borane complex)
IATA: Water-reactive solid, n.o.s. (2-Picoline borane complex)

14.3 Transport hazard class(es)
ADR/RID: 4.3 IMDG: 4.3 IATA: 4.3

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

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
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006. REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations, and articles.
15.2 Chemical Safety Assessment
No data available

SECTION 16. OTHER INFORMATION

The advice offered is derived from the currently available information on the hazardous materials in this product and it 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.