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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L1

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |
| 1% ~ 3% | Carbon black | CAS:<br>EC: | 1333-86-4<br>215-609-9 | The product is not classified as dangerous according to GHS - Fifth revised edition. |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

Carbon black - CAS: 1333-86-4

- OEL Type: ACGIH - TWA(8h): 3 mg/m3
- OEL Type: OSHA - TWA: 3.5 mg/m3
- OEL Type: JSOH - TWA: 1 mg/m3 - Notes: as Class 2 Dusts (Respirable dust)
- Notes: RESPIRABLE DUST
- OEL Type: JSOH - TWA: 4 mg/m3 - Notes: as Class 2 Dusts (Total dust)
- Notes: TOTAL DUST
- Notes: as total dust

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

| | | |
|---|---|---|
| Appearance and colour: | Black Liquid | |
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 65.5 ℃ / 150 °F | (Cleveland open cup method, JIS K2265-4) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | 0.98 at 20 ℃ | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Components do not come under carcinogens (Ref. 1), except for Carbon black

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative

g) reproductive toxicity:

Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

Carbon black - CAS: 1333-86-4

a) acute toxicity:

Test: LD50 - Route: Dermal - Species: Rabbit > 3 g/kg - Source: Acute Toxicity Data. Journal of the American College of Toxicology, Part B. Vol. 15

Test: LD50 - Route: Oral - Species: Rat > 15400 mg/kg - Source: Acute Toxicity Data. Journal of the American College of Toxicology, Part B. Vol. 15

Carbon black - CAS: 1333-86-4

With excessive exposure, carbon black has been listed as a possible human carcinogen. However, as engineered within this ink cartridge, emissions to air of carbon black during normal printing use have not been found. IARC, the International Agency for Research on Cancer, has found printing inks to be not classifiable as human carcinogens.

If not differently specified, the information listed below must be considered as N.A.:

a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity

Adopt good working practices, so that the product is not released into the environment.

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) Aquatic acute toxicity:

Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96

Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48

Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question
This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:
H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0
Paragraphs modified from the previous revision:
3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:
ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1
Ref. 1 ·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)

·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2 ·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |

WGK: German Water Hazard Class.

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L2

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Cyan Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 65.5 ℃ / 150 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | 0.98 at 20 ℃ | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0

Paragraphs modified from the previous revision:

3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1
·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2
·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

| | |
|---|---|
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L3

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Magenta Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 66.0 ℃ / 151 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | 0.98 at 20 ℃ | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0

Paragraphs modified from the previous revision:

3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties
11. Toxicological information

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1 ·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2 ·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of

| | |
|---|---|
| | Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L4

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Yellow Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 65.5 ℃ / 150 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | 0.98 at 20 ℃ | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative

g) reproductive toxicity:

Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity

Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) Aquatic acute toxicity:

Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

None

## 13. Disposal considerations

Disposal methods

Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number

Not classified as dangerous in the meaning of transport regulations.

UN proper shipping name

No data available

Transport hazard class(es)

No data available

Packing group, if applicable

No data available

Environmental hazards

No data available

Special precautions for user

No data available

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

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0

Paragraphs modified from the previous revision:

3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties
11. Toxicological information

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1 ·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2 ·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of

| | |
|---|---|
| | Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L5

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Light Cyan Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 62.5 ℃ / 145 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | 0.98 at 20 ℃ | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0

Paragraphs modified from the previous revision:

3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1
·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2
·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

| | |
|---|---|
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L6

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Light Magenta Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 62.5 ℃ / 145 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | No data available | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0

Paragraphs modified from the previous revision:

3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1
·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2
·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

| | |
|---|---|
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L7

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |
| 0.5% ~ 1% | Carbon black | CAS:<br>EC: | 1333-86-4<br>215-609-9 | The product is not classified as dangerous according to GHS - Fifth revised edition. |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

Carbon black - CAS: 1333-86-4

- OEL Type: ACGIH - TWA(8h): 3 mg/m3
- OEL Type: OSHA - TWA: 3.5 mg/m3
- OEL Type: JSOH - TWA: 1 mg/m3 - Notes: as Class 2 Dusts (Respirable dust)
- OEL Type: JSOH - TWA: 4 mg/m3 - Notes: as Class 2 Dusts (Total dust)
- Notes: as total dust

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

| | | |
|---|---|---|
| Appearance and colour: | Light Black Liquid | |
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 62.5 ℃ / 145 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | No data available | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Components do not come under carcinogens (Ref. 1), except for Carbon black

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg
Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg
b) skin corrosion/irritation:
Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative
c) serious eye damage/irritation:
Test: Eye Irritant - Species: Rabbit Negative
e) germ cell mutagenicity:
Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative
Carbon black - CAS: 1333-86-4
a) acute toxicity:
Test: LD50 - Route: Dermal - Species: Rabbit > 3 g/kg - Source: Acute Toxicity Data. Journal of the American College of Toxicology, Part B. Vol. 15
Test: LD50 - Route: Oral - Species: Rat > 15400 mg/kg - Source: Acute Toxicity Data. Journal of the American College of Toxicology, Part B. Vol. 15

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number

Not classified as dangerous in the meaning of transport regulations.

UN proper shipping name

No data available

Transport hazard class(es)

No data available

Packing group, if applicable

No data available

Environmental hazards

No data available

Special precautions for user

No data available

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

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated February 19, 2019, Revision: 2.0

Paragraphs modified from the previous revision:

3. Composition/information on ingredients
8. Exposure controls/personal protection
9. Physical and chemical properties

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1 ·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2 ·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L8

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Orange Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 62.5 ℃ / 145 °F | (closed cup met hod, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | No data available | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 25 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

This safety data sheet has been completely updated in compliance to Regulation 2015/830.
Safety Data Sheet dated February 19, 2019, Revision: 1.0
This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1

Ref. 1
- IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
- Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
- TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
- IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
- National Toxicology Program (NTP) Report on Carcinogens (USA)
- Annex VI of 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
- MAK und BAT Werte Liste (DFG: German Research Foundation)
- TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2
- Annex VI of 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
- TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

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It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |

| | |
|---|---|
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45L9

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 10% ~ 12.5% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 °C. Keep away from unguarded flame and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Use personal protective equipment as required.

Thermal Hazards:

None

## 9. Physical and chemical properties

Appearance and colour: Red Liquid

| | | |
|---|---|---|
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| pH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 62.5 °C / 145 ° F | (closed cup method, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | No data available | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 °C |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Does not contain carcinogens (Ref. 1)

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg

b) skin corrosion/irritation:

Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative

c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available
Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.

Safety Data Sheet dated September 9, 2020, Revision: 1.1

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

Ref. 1 ·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2 ·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |

| | |
|---|---|
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

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# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45LA

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

GHS label elements, including precautionary statements

Hazard pictograms:

None

Warning

Hazard statements:

H227 Combustible liquid.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | 1-ethoxy-2-(2-methoxy ethoxy)ethane | CAS: 1002-67-1<br>EC: 213-690-5<br>REACH No.: 01-21202835 43-53 | 2.6/4 Flam. Liq. 4 H227 |

| | | | | |
|---|---|---|---|---|
| 12.5% ~ 15% | Titanium dioxide | CAS:<br>EC: | 13463-67-7<br>236-675-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 5% ~ 7% | (2-Methoxymethylethoxy)propanol | CAS:<br>EC: | 34590-94-8<br>252-104-2 | 2.6/4 Flam. Liq. 4 H227 |
| 1% ~ 3% | gamma-Butyrolactone | CAS:<br>EC: | 96-48-0<br>202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

Water spray, dry chemical, carbon dioxide or alcohol-resistant foam.

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available

Oxidizing properties: No data available

Special protective actions for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand

Methods and material for containment and cleaning up

Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.

Conditions for safe storage, including any incompatibilities

Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters

Titanium dioxide - CAS: 13463-67-7

- OEL Type: ACGIH - TWA(8h): 10 mg/m3
- OEL Type: OSHA - TWA: 15 mg/m3
- OEL Type: JSOH - TWA: 0.3 mg/m3 - Notes: (nanoparticle, as Ti)
- OEL Type: JSOH - TWA: 1 mg/m3 - Notes: as Class 2 Dusts (Respirable dust)
- OEL Type: JSOH - TWA: 4 mg/m3 - Notes: as Class 2 Dusts (Total dust)

(2-Methoxymethylethoxy)propanol - CAS: 34590-94-8

- OEL Type: ACGIH - TWA(8h): < 0.05 % - STEL: < 0.05 %
- OEL Type: EU - TWA(8h): 308 mg/m3, 50 ppm - Notes: Skin designation

DNEL Exposure Limit Values

No data available

PNEC Exposure Limit Values

No data available

Appropriate engineering controls:

None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Not needed for normal use.

Thermal Hazards:

None

## 9. Physical and chemical properties

| | | |
|---|---|---|
| Appearance and colour: | White Liquid | |
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| PH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | 65 ℃ / 149 °F | (closed cup metho d, ASTM D 3278) |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | No data available | |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | No data available | |
| Solubility in water: | Soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 20 ℃ |

## 10. Stability Toxicological information

Reactivity

Stable under normal conditions

Chemical stability

Stable under normal conditions

Possibility of hazardous reactions

None

Conditions to avoid

Stable under normal conditions.

Incompatible materials

None in particular.

Hazardous decomposition products

None.

## 11. Toxicological information

Information on toxicological effects

Toxicological information of the product:

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative

f) carcinogenicity:

Components do not come under carcinogens (Ref. 1), except for Titanium dioxide

g) reproductive toxicity:

Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)

Toxicological information of the main substances found in the product:

1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg
Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg
b) skin corrosion/irritation:
Test: Skin Irritant - Route: Dermal - Species: Rabbit Negative
c) serious eye damage/irritation:
Test: Eye Irritant - Species: Rabbit Negative
e) germ cell mutagenicity:
Test: Mutagenesis - Species: Salmonella Typhimurium Negative
g) reproductive toxicity:
Test: Reproductive Toxicity - Route: Oral - Species: Rat Negative

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
1-ethoxy-2-(2-methoxyethoxy)ethane - CAS: 1002-67-1
a) Aquatic acute toxicity:
Endpoint: EC50 - Species: Algae > 89.5 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia > 93.6 mg/l - Duration h: 48
Endpoint: LC50 - Species: Fish > 90.8 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
None

## 13. Disposal considerations

Disposal methods
Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number
Not classified as dangerous in the meaning of transport regulations.
UN proper shipping name
No data available

Transport hazard class(es)
No data available
Packing group, if applicable
No data available
Environmental hazards
No data available
Special precautions for user
No data available
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question
This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:
H227 Combustible liquid.

This safety data sheet has been completely updated in compliance to Regulation 2015/830.
Safety Data Sheet dated February 19, 2019, Revision: 1.0
This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:
ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1

Ref. 1
·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)
·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2
·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

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This Safety Data Sheet cancels and replaces any preceding release.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |

# Safety Data Sheet

## 1. Identification

GHS Product Identifier

Mixture identification:

Trade name: Ink Supply Unit, T45LB

Recommended use of the chemical and restrictions on use

Recommended use:

Ink for inkjet printing

Supplier's details

Company:

SEIKO EPSON CORPORATION
80 Harashinden, Hirooka, Shiojiri-shi, Nagano-ken, 399-0785 JAPAN
Phone number: +81-263-52-2552

Competent person responsible for the safety data sheet:

MSDS_HRO@exc.epson.co.jp

Emergency phone number

Phone number: +81-263-52-2552

## 2. Hazard identification

Classification of the substance or mixture

Warning, Flam. Liq. 4, Combustible liquid.

Warning, Skin Irrit. 2, Causes skin irritation.

GHS label elements, including precautionary statements

Hazard pictograms:

Warning

Hazard statements:

H227 Combustible liquid.
H315 Causes skin irritation.

Precautionary statements:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves.
P302+P352 IF ON SKIN: Wash with plenty of water.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P370+P378 In case of fire: Use a dry powder fire extinguisher to extinguish.
P403 Store in a well-ventilated place.
P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Other hazards which do not result in a classification

No other hazards

## 3. Composition/information on ingredients

Substances

No

Mixtures

Hazardous components within the meaning of GHS and related classification:

| Qty | Name | Ident. Number | Classification |
|---|---|---|---|
| 65% ~ 80% | Bis(2-ethoxyethyl) ether | CAS: 112-36-7<br>EC: 203-963-7<br>REACH No.: 01-21199699 46-13 | 2.6/4 Flam. Liq. 4 H227<br>  3.2/2 Skin Irrit. 2 H315 |
| 15% ~ 20% | gamma-Butyrolactone | CAS: 96-48-0<br>EC: 202-509-5 | The product is not classified as dangerous according to GHS - Fifth revised edition. |
| 1% ~ 3% | piment | Index number: 013-002-00-1<br>CAS: 7429-90-5<br>EC: 231-072-3 |  2.1/U Unst. Expl. H200<br>  2.12/2 Water-react. 2 H261<br>  2.7/1 Flam. Sol. 1 H228 |

## 4. First-aid measures

Description of necessary first-aid measures

In case of skin contact:

Immediately take off all contaminated clothing.

Remove contaminated clothing immediately and dispose off safely.

After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an opthalmologist immediately.

Protect uninjured eye.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

Most important symptoms/effects, acute and delayed

None

Indication of immediate medical attention and special treatment needed, if necessary

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment:

None

## 5. Fire-fighting measures

Suitable extinguishing media

In case of fire: Use a dry powder fire extinguisher to extinguish.

Unsuitable extinguishing media:

None in particular.

Special hazards arising from the chemical

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Hazardous combustion products:

None

Explosive properties: No data available
Oxidizing properties: No data available
Special protective actions for fire-fighters
Use suitable breathing apparatus .
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Move undamaged containers from immediate hazard area if it can be done safely.

## 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear personal protection equipment.
Remove persons to safety.
See protective measures under point 7 and 8.
Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand
Methods and material for containment and cleaning up
Wash with plenty of water.

## 7. Handling and storage

Precautions for safe handling
Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.
Conditions for safe storage, including any incompatibilities
Always keep in a well ventilated place.
Store at below 20 ℃. Keep away from unguarded flam e and heat sources. Avoid direct exposure to sunlight.
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Cool and adequately ventilated.

## 8. Exposure controls/personal protection

Control parameters
aluminium powder (stabilised) - CAS: 7429-90-5
- OEL Type: ACGIH - TWA(8h): 1 mg/m3
- OEL Type: ISHL -- Country: JAPAN - TWA: 0.025 mg/m3
- OEL Type: JSOH -- Country: JAPAN - TWA: 0.5 mg/m3 - Notes: RESPIRABLE DUST
- OEL Type: JSOH -- Country: JAPAN - TWA: 2 mg/m3 - Notes: TOTAL DUST

DNEL Exposure Limit Values

Bis(2-ethoxyethyl) ether - CAS: 112-36-7
Worker Industry: 5.96 mg/m3 - Exposure: Human Inhalation
Worker Industry: 1.71 mg/kg/day - Exposure: Human Oral
Worker Professional: 50.05 mg/m3 - Exposure: Human Inhalation - Frequency: Long Term, systemic effects
Worker Professional: 3.43 mg/kg/day - Exposure: Human Dermal - Frequency: Long Term, systemic effects

PNEC Exposure Limit Values
Bis(2-ethoxyethyl) ether - CAS: 112-36-7
Target: Fresh Water - Value: 0.001 mg/l
Target: Freshwater sediments - Value: 0.007 mg/kg
Target: Marine water - Value: 0.0001397 mg/l
Target: Marine water sediments - Value: 0.0006778 mg/kg
Target: Air - Value: 0.000001105 mg/m3

Appropriate engineering controls:
None

Individual protection measures, such as personal protective equipment (PPE)

Eye protection:
Use close fitting safety goggles, don't use eye lens.

Protection for skin:
Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:
Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:
Not needed for normal use.

Thermal Hazards:
None

## 9. Physical and chemical properties

| | | |
|---|---|---|
| Appearance and colour: | Silver Liquid | |
| Odour: | Slightly | |
| Odour threshold: | No data available | |
| pH: | Not Relevant | |
| pH: | Not Relevant | |
| Melting point / freezing point: | No data available | |
| Initial boiling point and boiling range: | No data available | |
| Flash point: | > 78.7 ℃ / 174 °F | |
| Evaporation rate: | No data available | |
| Solid/gas flammability: | No data available | |
| Upper/lower flammability or explosive limits: | | No data available |
| Vapour pressure: | No data available | |
| Vapour density: | No data available | |
| Relative density: | No data available | |
| Solubility in water: | Slightly soluble | |
| Solubility in oil: | No data available | |
| Partition coefficient (n-octanol/water): | No data available | |
| Auto-ignition temperature: | No data available | |
| Decomposition temperature: | No data available | |
| Viscosity: | < 5 mPa·s | at 25 ℃ |

## 10. Stability Toxicological information

Reactivity
Stable under normal conditions
Chemical stability
Stable under normal conditions
Possibility of hazardous reactions
None
Conditions to avoid
Stable under normal conditions.
Incompatible materials
None in particular.
Hazardous decomposition products
None.

## 11. Toxicological information

Information on toxicological effects
Toxicological information of the product:
e) germ cell mutagenicity:
Test: Mutagenesis - Species: Salmonella Typhimurium and Escherichia coli Negative
f) carcinogenicity:
Does not contain carcinogens (Ref. 1)
g) reproductive toxicity:
Does not contain reproductive toxicity and developmental toxic substances (Ref. 2)
Toxicological information of the main substances found in the product:
Bis(2-ethoxyethyl) ether - CAS: 112-36-7
a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat = 4970 mg/kg
c) serious eye damage/irritation:
Test: Eye Irritant - Species: Rabbit Non-irritant

If not differently specified, the information listed below must be considered as N.A.:
a) acute toxicity;
b) skin corrosion/irritation;
c) serious eye damage/irritation;
d) respiratory or skin sensitisation;
e) germ cell mutagenicity;
f) carcinogenicity;
g) reproductive toxicity;
h) STOT-single exposure;
i) STOT-repeated exposure;
j) aspiration hazard.

## 12. Ecological information

Toxicity
Adopt good working practices, so that the product is not released into the environment.
Bis(2-ethoxyethyl) ether - CAS: 112-36-7
a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish > 10000 mg/l - Duration h: 96
Endpoint: LC50 - Species: Daphnia = 6600 mg/l - Duration h: 96
Persistence and degradability
No data available
Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

None

## 13. Disposal considerations

Disposal methods

Recover if possible. In so doing, comply with the local and national regulations currently in force.

## 14. Transport information

UN number

Not classified as dangerous in the meaning of transport regulations.

UN proper shipping name

No data available

Transport hazard class(es)

No data available

Packing group, if applicable

No data available

Environmental hazards

No data available

Special precautions for user

No data available

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

No data available

## 15. Regulatory information

Safety, health and environmental regulations specific for the product in question

This Safety Data Sheet has been prepared according to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Fifth revised edition.

## 16. Other information

Full text of phrases referred to in Section 3:

H227 Combustible liquid.
H315 Causes skin irritation.
H200 Unstable explosives.
H261 In contact with water releases flammable gases.
H228 Flammable solid.

This safety data sheet has been completely updated in compliance to Regulation 2015/830.
Safety Data Sheet dated June 29, 2018, Revision: 1.0
This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1

Ref. 1 ·IARC Monographs on the Evaluation Carcinogenic Risks to Humans (IARC: International Agency for Research on Cancer)

·Journal of Occupational Health (JOH) (Japan Society of Occupational Health (JSOH))
·TLVs and BEIs (ACGIH: American Conference of Governmental Industrial Hygienists)
·IRIS Carcinogenic Assessment (IRIS: Integrated Risk Information System of US EPA)
·National Toxicology Program (NTP) Report on Carcinogens (USA)
·Annex VI of 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
·MAK und BAT Werte Liste (DFG: German Research Foundation)
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

Ref. 2 ·Annex VI of 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
·TRGS 905, Verzeichnis krebserzeugender, keimzell mutagener oder reproduktionstoxischer Stoffe (AGS: Committee on Hazardous Substances, Germany)

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This Safety Data Sheet cancels and replaces any preceding release.

| | |
|---|---|
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road. |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society). |
| CLP: | Classification, Labeling, Packaging. |
| DNEL: | Derived No Effect Level. |
| EINECS: | European Inventory of Existing Commercial Chemical Substances. |
| GefStoffVO: | Ordinance on Hazardous Substances, Germany. |
| GHS: | Globally Harmonized System of Classification and Labeling of Chemicals. |
| IATA: | International Air Transport Association. |
| IATA-DGR: | Dangerous Goods Regulation by the "International Air Transport Association" (IATA). |
| ICAO: | International Civil Aviation Organization. |
| ICAO-TI: | Technical Instructions by the "International Civil Aviation Organization" (ICAO). |
| IMDG: | International Maritime Code for Dangerous Goods. |
| INCI: | International Nomenclature of Cosmetic Ingredients. |
| KSt: | Explosion coefficient. |
| LC50: | Lethal concentration, for 50 percent of test population. |
| LD50: | Lethal dose, for 50 percent of test population. |
| LTE: | Long-term exposure. |
| PNEC: | Predicted No Effect Concentration. |
| RID: | Regulation Concerning the International Transport of Dangerous Goods by Rail. |
| STE: | Short-term exposure. |
| STEL: | Short Term Exposure limit. |
| STOT: | Specific Target Organ Toxicity. |
| TLV: | Threshold Limiting Value. |

| | |
|---|---|
| TWATLV: | Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard). |
| WGK: | German Water Hazard Class. |