



**GHS label elements**

Hazard symbols:

**Signal word:** Danger**Hazard statement and precautionary statement:**

- Highly flammable liquid and vapor
- Causes serious eye irritation
- May cause genetic defects
- May damage fertility or the unborn child
- May cause damage to central nervous system or kidney or systemic toxicity-single exposure
- May cause airway irritation, drowsiness or dizziness-single exposure
- Causes damage to liver through prolonged or repeated exposure
- May cause damage to central nervous system through prolonged or repeated exposure

**Precautionary statements:**

- Keep out of reach of children. Read label before use. If medical advice is needed: Have product container or label at hand.

**Prevention:**

- Keep away from ignition sources such as heat/sparks/open flame– No smoking.
- Take precautionary measures against static discharge.
- Wear protective gloves and eye/face protection as specified by the competent authority.
- Do not breathe dust/mist/vapors.
- Use only in a well-ventilated area. Call a doctor/physician if you feel unwell.
- Do not eat, drink or smoke when using this product.
- Avoid contact during pregnancy/while nursing.
- Wash hands thoroughly after handling.

**Response:**

- In case of fire, use dry chemical, CO<sub>2</sub>, water splay (fog) or foam for extinction.
- IF SWALLOWED: Call a doctor/physician if you feel unwell. Rinse mouth.
- IF ON SKIN: Gently wash with plenty of soap and water.
- Wash/Decontaminate removed clothing before reuse.
- If skin irritation occurs, seek medical advice/attention.
- IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor/physician.
- Collect spillage.

**Storage:**

- Store in cool/well-ventilated place. Store locked up.
- Call a doctor/physician if exposed or you feel unwell.

**Disposal:**

- Waste must be disposed of according to applicable regulations.

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### 3 Composition/information on ingredients

**Substance or mixture;** mixture

**Composition:**

Chemical name	concentration (%)	CAS number
Ethanol	70-80	64-17-5
1-Propanol	5-15	71-23-8
2-Propanol	<5	67-63-0
Ethylene Glycol	<1	107-21-1

### 4 First-aid measures

**Inhalation;**

Remove the victim from the contamination immediately to fresh air. Keep the victim warm and quiet and arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

**Skin contact;**

Remove all contaminated clothing, shoes and socks from the affected areas as quickly as possible. Wash the affected area under running water using a mild soap. If irritation persists, arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

**Eye contact;**

Gently rinse the affected eyes with clean water for at least 15 minutes. Remove contact lenses if easily possible. and refer for medical attention.

**Ingestion;**

Never give anything by mouth to someone who is unconscious or convulsing. If the victim is responsive, give him one or two glasses of water. And refer for medical attention.

### 5 Fire-fighting measures

**Suitable extinguishing media;**

Use dry chemical, CO<sub>2</sub>, water splay (fog) or foam.

**Firefighting procedures;**

Use water spray to cool fire-exposed surfaces and to protect personnel. Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disperse the vapors.

Avoid spraying water directly into storage containers due to danger of boil over.

**Unusual fire/explosion hazard;**

Flammable liquid, can release vapors that form flammable mixtures at temperatures at or above the flashpoint.

**Special protective equipment and precautions for fire fighters;**

Fire fighters should wear boots, overalls, gloves, eye and face protection and breathing apparatus.

### 6 Accidental release measures

Shut off all sources of ignition; No smoking or flames in area. Absorb spill with inert material (e.g., dry sand or earth), then place in closed containers using non-sparking tools. Flush residual spill (area) with copious amounts of water.

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## 7 Handling and storage

### Handling;

Use only in the well-ventilated areas.  
Make available in the work area emergency shower and eyes wash.  
Avoid contact with skin or eyes.

### Storage;

Close up the container and keep it in dark cool(0~20°C) place.  
Keep away from combustible materials and sources of ignition.

## 8 Exposure controls/personal protection

### Exposure guidelines:

ACGIH TLV-TWA (ppm)

Ethanol	:1000
1-Propanol	:200(skin)
2-Propanol	:200
Ethylene Glycol	:Not Available

ACGIH STEL(ppm)

Ethanol	:No data
1-Propanol	:400(skin)
2-Propanol	:400
Ethylene Glycol	:100mg/m3

## 9 Physical and chemical properties

Appearance

Physical state	:Liquid
Color	:Clear
Odor	:Solvent odor
Boiling point <sup>2)</sup>	:78.32°C (ethanol)
Flash point	:13.3°C (closed cup)
Upper/lower flammability or explosive limits <sup>2)</sup>	:Lower 3.3 vol%、Upper 19 vol%(ethanol)
Vapor pressure <sup>2)</sup>	:≤5.9kPa (20°C) (ethanol)
Vapor density (Air=1) <sup>2)</sup>	:1.59 (ethanol)
Relative density	:0.84(20°C)
Solubility (Water) <sup>2)</sup>	:water;infinite(ethanol)
Partition coefficient: n-octanol/water <sup>2)</sup>	:-0.32(ethanol)
Auto-ignition temperature <sup>2)</sup>	:390°C(ethanol)
Decomposition temperature	:No data

## 10 Stability and reactivity

Stability: The product is stable.

Conditions and materials to avoid: Not available

Hazardous decomposition products: These products are carbon oxides

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## 11 Toxicological information

### Acute toxicity:

#### Ethanol

TDLo(oral,man): 700mg/kg(NTOTDY 8,77,1986)

LD50(oral,rat): 9000mg/kg(VCVGK\* -, 93, 1984)

LC50(ihl,rat): 20000ppm/10h(NPIRI\* 1,44,1974)

TCLo(ihl,human): 2500mg/m<sup>3</sup>/20M(VCVGK\* -, 93,1984)

#### 1-Propanol

LDLo(oral,woman): 5700mg/kg(ATXKA8 16,84,1956)

LD50(oral,rat): 1870mg/kg(AMIHBC 10,16,1954)

LCLo(ihl,rat): 4000ppm/4h(AMIHBC 10,16,1954)

LD50(skin,rabbit): 5040mg/kg(AMIHBC 10,16,1954)

#### 2-Propanol

LD50(oral,rat): 5000mg/kg(VCVGK\* -, 97, 1984)

LC50(ihl,rat): 72600mg/m<sup>3</sup>(VCVGK\* -, 97, 1984)

LC50(ihl,mouse): 53000mg/m<sup>3</sup>(VCVGK\* -, 97, 1984)

TDLo(oral,human): 286mg/kg(VCVGK\* -, 97, 1984)

#### Ethylene Glycol

ihl; rat; LC:>200 mg/m<sup>3</sup>/4H

oral; human; LDLo:398 mg/kg

oral; rat; LD50:4700 mg/kg

skin; rabbit; LD50:9530 uL/kg

ipr; rat; LD50:5010 mg/kg

### Skin corrosion/irritation:

#### Ethanol

Skin; rabbit; 20mg/24h; Moderate(85JCAE -, 189, 1986)

#### 1-Propanol

Skin; rabbit; 500mg; Mild(UCDS\*\* 6/28/1972)

Skin; human; 100%/24h; Mild(CODEDG 39, 240, 1998)

Skin; human, erythema(EHC 102, 1990)

#### 2-Propanol

Skin; rabbit; 500mg; Mild(NTIS\*\* AD-A106-944)

#### Ethylene Glycol

skin; rabbit; 555 mg open MLD

### Serious eye damage/irritation:

#### Ethanol

rabbit; 100mg/4S; Moderate(FCTOD7 20,573,1982)

#### 1-Propanol

Eye; rabbit; 20mg/24h; Moderate(85JCAE -,191,1986)

#### 2-Propanol

Eye; rabbit; 100mg/24h; Moderate(85JCAE -,191,1986)

#### Ethylene Glycol

eye; rabbit; 500 mg/24H MLD

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**Respiratory or skin sensitization:**

Ethanol  
Not available  
1-Propanol  
Not available  
2-Propanol  
Not available  
Ethylene Glycol  
Not available

**Germ cell mutagenicity:**

Ethanol  
DNA damage; *S.cerevisiae*; 850mmol/L(MUREAV 326,165,1995)  
Mutation in microorganisms; *S.typhimurium*; 11pph(ENVRAL 52, 225, 1990)  
Cytogenetic analysis; human; lymphocyte; 2.5pph/24h(MUREAV 537, 117, 2003)  
1-Propanol  
Sex chromosome loss and nondisjunction; *A.nidulans*; 18000ppm(MUREAV 215,187,1989)  
Mutation in microorganisms; *E.coli*; 4pph(ABMGAJ 23,843,1969)  
2-Propanol  
TDLo(oral,rat): 8mg/kg(female 6-15 D preg)(RTOPDW 23,183,1996)  
TCLo(ihl,rat): 3500ppm/7h(female 1-19 D preg)(FCTOD7 26,247,1988)  
Ethylene Glycol  
Not available

**Carcinogenicity:**

Ethanol  
TDLo(oral,mouse): 320mg/kg/50W-I(CALEDQ 13,345,1981)  
1-Propanol  
TDLo(oral,rat): 50mg/kg/81W-I(ARGEAR 45,19,1975)  
2-Propanol  
Not available  
Ethylene Glycol  
Not available

**Reproductive toxicity:**

Ethanol  
TDLo(oral,woman): 250mg/kg(37 W preg); Effects on Embryo or Fetus - other effects to embryo(AJOGAH 145,251,1983)  
TDLo(oral,rat): 22.5mg/kg(female 11-20 D preg); Specific Developmental Abnormalities - Central Nervous Systems(NETEEC 24, 719, 2002)  
1-Propanol  
TCLo(ihl,rat): 7000 ppm/7h(female 1-19 D Preg)(FCTOD7 26,247,1988)  
2-Propanol  
TDLo(oral,rat): 8mg/kg(female 6-15 D preg)(RTOPDW 23,183,1996)  
TCLo(ihl,rat): 3500ppm/7h(female 1-19 D preg)(FCTOD7 26,247,1988)  
Ethylene Glycol  
Not available

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**STOST-single exposure:**

- Ethanol
  - Human ihl, 5000ppm(9,4mg/L), respiratory tract irritation and confusion(ACGIH 2001)
- 1-Propanol
  - Rat, mouse, rabbit, ihl or orl, anesthesia(ACGIH 2004: EHC 102, 1990: PETTY 4th 1994)
  - Mouse, ihl, the respiratory tract irritation (EHC 102,1990)
- 2-Propanol
  - Not available
- Ethylene Glycol
  - Causes damage to respiratory system, heart, kidney, central nervous system.

**STOST-repeated exposure:**

- Ethanol
  - Not available
- 1-Propanol
  - Not available
- 2-Propanol
  - Not available
- Ethylene Glycol
  - Causes damage tp respiratory system, heart, central nervous system.

**Aspiration hazard:**

- Ethanol
  - Not available
- 1-Propanol
  - Not available
- 2-Propanol
  - Not available
- Ethylene Glycol
  - Not available

**12 Ecological information****Ecotoxicity<sup>1)</sup>:**

- Ethanol
  - daphnids(48h-LC50(g/L)):5463.9(ECETOC TR91 2003)
- 1-Propanol
  - fathead minnows(96h-EC50(g/L)):4.63
  - daphnids(48h-LC50(mg/L)):3025(EHC 102, 1990)
- 2-Propanol
  - guppies(7days-LC50(mg/L)):7060
  - fathead minnow(1h-LC50(mg/L)):11830
- Ethylene Glycol
  - Fish: 96h LC50:>100 mg/L (Oryzias latipes)
  - Crustacea: 48h EC50:>1100 mg/L (Daphnia magna)
  - Algae: 72h EC50:>1000 mg/L (Selenastrum capricornutum)

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**Persistence and degradability:**

Ethanol  
This material is biodegradable.  
1-Propanol  
Not available  
2-Propanol  
This material is biodegradable.  
Ethylene Glycol  
Not available

**Bioaccumulative potential:**

Ethanol  
Not available  
1-Propanol  
Not available  
2-Propanol  
Not available  
Ethylene Glycol  
Not available

**Mobility in soil:**

Ethanol  
Not available  
1-Propanol  
Not available  
2-Propanol  
Not available  
Ethylene Glycol  
Not available

**13 Disposal considerations**

Scrap materials may be disposed by licensed contractor or burned in an approved incinerator.  
Do not dump into sewer, on the ground or into any body of water.  
Follow national and local regulations.

**14 Transport information**

Follow all regulations in your country.

UN Number	:1210
UN Proper Shipping Name	:Printing ink, flammable
Transport hazard class	:Class 3(Flammable liquid)
Packing Group	: II
Environmental hazards	:No

**15 Regulatory information**

Follow all regulations in your country.  
Content of RoHS Directive material Cd<100ppm Pb, Hg, Hexavalent Cr, PBB, PBDE<1000ppm

**16 References**

- 1) Results of Eco-toxicity tests of chemicals conducted by Ministry of the Environment in Japan
- 2) International Chemical Safety Cards

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