

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**GHS label elements**

Hazard symbols:

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

- Highly flammable liquid and vapour
- May be harmful if swallowed
- Harmful if inhaled
- Causes mild skin irritation
- Causes damage to central nervous system-single exposure
- May cause damage to liver-single exposure
- May cause respiratory irritation, drowsiness or dizziness-single exposure
- Causes damage to liver, systemic toxicity, 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 spray (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.

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**Disposal**

- Waste must be disposed of according to applicable regulations.

**3 Composition/information on ingredients****Substance or mixture;** mixture**Composition;**

Chemical name	concentration (%)	CAS number
Methyl propyl ketone	60-70	107-87-9
Ethanol	20-30	64-17-5
4-Methyl-2-pentanone	<5	108-10-1
n-Propyl Acetate	<5	109-60-4
2-Propanol	<5	67-63-0

**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 spray (fog) or foam.

**Fire fighting 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.

---

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

## 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.

## 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 ) place.

Keep away from combustible materials and sources of ignition.

## 8 Exposure controls/personal protection

### Exposure guidelines;

ACGIH TLV-TWA (ppm)

Methyl propyl ketone	:200
Ethanol	:1000
4-Methyl-2-pentanone	:50
n-Propyl Acetate	:200
2-Propanol	:200

ACGIH STEL(ppm)

Methyl propyl ketone	:250
Ethanol	:No data
4-Methyl-2-pentanone	:75
n-Propyl Acetate	:250
2-Propanol	:400

## 9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Clear
Odor	:Solvent odor
Boiling point	:77
Flash point	:7.0 (closed cup)
Upper/lower flammability or explosive limits	:Lower 2.02 vol%, Upper 10.7 vol%
Vapor pressure	:5.3kPa (20 )
Vapor density (Air = 1)	:None known
Relative density	:0.81(20 )
Solubility (Water)	:None known
Partition coefficient: n-octanol/water	:None known
Auto-ignition temperature	:362
Decomposition temperature	:No data

## 10 Stability and reactivity

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Stability: The product is stable.

Conditions and materials to avoid: Not available

Hazardous decomposition products: These products are carbon oxides

## 11 Toxicological information

### Acute toxicity;

Methyl propyl ketone

oral LD 50 Rat: 1,600 mg/kg

inhalation LC Lo Rat: 2000 ppm, 4 h

dermal LD 50 Rabbit: 6,500 mg/kg

Ethanol

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

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

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

TCLo(ihl,human): 2500mg/m3/20M(VCVGK\* -, 93,1984)

4-Methyl-2-pentanone

LD50(ori,rat): 2080mg/kg(UCDC\*\* 4/25/1958)

LD50(ori,rat): 4600mg/kg(VCVGK\* -, 426, 1994)

LC50(ihl,rat): 100gm/m3(NTIS\*\* OTS0535383)

LD50(ori,mouse): 2850mg/kg(VCVGK\* -, 426, 1994)

TCLo(ihl,human): 12mg/m3(GISAAA 5, 8, 1994)

LD50(ori,rat): 2919mg/kg(Calcul

n-Propyl Acetate

DERMAL LD50: >20 mL/kg (rabbit)

ORAL LD50: 9370 mg/kg (rat)

INHALATION LC50: 8000 ppm (rat, 4 hrs.)

2-Propanol

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

LC50(ihl,rat): 72600mg/m3(VCVGK\* -, 97, 1984)

LC50(ihl,mouse): 53000mg/m3(VCVGK\* -, 97, 1984)

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

### Skin corrosion/irritation;

Methyl propyl ketone

None known

Ethanol

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

4-Methyl-2-pentanone

Skin; rabbit; 500mg/24H; Mild(85JCAE -, 284, 1986)

n-Propyl Acetate

Prolonged or repeated contact may cause drying, cracking, or irritation.

2-Propanol

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

### Serious eye damage/irritation;

Methyl propyl ketone

None known

Ethanol

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

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**4-Methyl-2-pentanone**

Eye; rabbit; 40mg; Severe(UCDC\*\* 4/25/1958)

Eye; human; 200ppm/15H(JIHTAB 28, 262, 1946)

rabbit; No irritation(ECETOC TR48,1992: CERI Hazard data sheet, 2000: PATTY 4th, 1994)

**n-Propyl Acetate**

May cause moderate burning, tearing, redness and swelling.

**2-Propanol**

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

**Respiratory or skin sensitization;**

Methyl propyl ketone

Ethanol

Not available

4-Methyl-2-pentanone

Not available

n-Propyl Acetate

None known

2-Propanol

Not available

**Germ cell mutagenicity;**

Methyl propyl ketone

None known

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)

4-Methyl-2-pentanone

Not available

n-Propyl Acetate

None known

2-Propanol

TDLo(ori,rat): 8gm/kg(female 6-15 D preg)(RTOPDW 23,183,1996)

TCLo(ihl,rat): 3500ppm/7H(female 1-19 D preg)(FCTOD7 26,247,1988)

**Carcinogenicity;**

Methyl propyl ketone

None known

Ethanol

TDLo(ori,mouse): 320mg/kg/50W-I(CALEDQ 13,345,1981)

4-Methyl-2-pentanone

Not available

n-Propyl Acetate

IARC: Not listed by IARC

NTP: Not listed by NTP.

OSHA: Not listed by OSHA

2-Propanol

Not available

**Reproductive toxicity;**

Methyl propyl ketone

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

None known

Ethanol  
 TDLo(ori,woman): 250mg/kg(37 W preg); Effects on Embryo or Fetus - other effects to embryo(AJOGAH 145,251,1983)  
 TDLo(ori,rat): 22.5gm/kg(female 11-20 D preg); Specific Developmental Abnormalities - Central Nervous Systems(NETEEC 24, 719, 2002)

4-Methyl-2-pentanone  
 TCLo(ihl,rat): 300ppm/6H(female 6-15 D preg)(FAATDF 8, 310, 1987)

n-Propyl Acetate  
 None known

2-Propanol  
 TDLo(ori,rat): 8gm/kg(female 6-15 D preg)(RTOPDW 23,183,1996)  
 TCLo(ihl,rat): 3500ppm/7H(female 1-19 D preg)(FCTOD7 26,247,1988)

**STOST-single exposure;**

Methyl propyl ketone  
 None known

Ethanol  
 Human ihl, 5000ppm(9,4mg/L), respiratory tract irritation and confusion(ACGIH 2001)

4-Methyl-2-pentanone  
 Human; ihl, The central nervous system symptom is admitted because of anesthetic actions such as the respiratory tract irritation, the mucosa irritations, and the headache, the dizziness, and the vomiturations. (CERI hazard data sheets, 2000: EHC 117,1990: ACGIH 7th, 2001: DFGOT vol.13, 1999: PATTY 4th, 1994: IRIS, 2003)  
 Animal; anesthetic action(IRIS, 2003: EHC 117,1990: DFGOT vol.13, 1999: PATTY 4th, 1994)

n-Propyl Acetate  
 None known

2-Propanol  
 Not available

**STOST-repeated exposure;**

Methyl propyl ketone  
 None known

Ethanol  
 Not available

4-Methyl-2-pentanone  
 Human; repeated exposure, Various symptoms were admitted for which target organs such as the feelings of weakness, the headache, the burning sensation in eye, the stomachache, nausea and vomitings, and the sore throat were not able to be specified. (E

n-Propyl Acetate  
 None known

2-Propanol  
 Not available

**Aspiration hazard.**

Methyl propyl ketone  
 None known

Ethanol  
 Not available

4-Methyl-2-pentanone  
 Not available

n-Propyl Acetate

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

None known  
2-Propanol  
Not available

## 12 Ecological information

### Toxicity :

#### Methyl propyl ketone

oral LD 50 Rat: 1,600 mg/kg  
inhalation LC Lo Rat: 2000 ppm, 4 h  
dermal LD 50 Rabbit: 6,500 mg/kg

#### Ethanol

TDLo(ori,man): 700mg/kg(NTOTDY 8,77,1986)  
LD50(ori,rat): 9000mg/kg(VCVGK\* -, 93, 1984)  
LC50(ihl,rat): 20000ppm/10H(NPIRI\* 1,44,1974)  
TCLo(ihl,human): 2500mg/m3/20M(VCVGK\* -, 93,1984)

#### 4-Methyl-2-pentanone

LD50(ori,rat): 2080mg/kg(UCDC\*\* 4/25/1958)  
LD50(ori,rat): 4600mg/kg(VCVGK\* -, 426, 1994)  
LC50(ihl,rat): 100gm/m3(NTIS\*\* OTS0535383)  
LD50(ori,mouse): 2850mg/kg(VCVGK\* -, 426, 1994)  
TCLo(ihl,human): 12mg/m3(GISAAA 5, 8, 1994)  
LD50(ori,rat): 2919mg/kg(Calcul

#### n-Propyl Acetate

DERMAL LD50: >20 mL/kg (rabbit)  
ORAL LD50: 9370 mg/kg (rat)  
INHALATION LC50: 8000 ppm (rat, 4 hrs.)

#### 2-Propanol

LD50(ori,rat): 5000mg/kg(VCVGK\* -, 97, 1984)  
LC50(ihl,rat): 72600mg/m3(VCVGK\* -, 97, 1984)  
LC50(ihl,mouse): 53000mg/m3(VCVGK\* -, 97, 1984)  
TDLo(ori,human): 286mg/kg(VCVGK\* -, 97, 1984)

### Persistence and degradability:

#### Methyl propyl ketone

None known

#### Ethanol

This material is biodegradable.

#### 4-Methyl-2-pentanone

This material is biodegradable.

#### n-Propyl Acetate

None known

#### 2-Propanol

This material is biodegradable.

### Bioaccumulative potential:

#### Methyl propyl ketone

None known

#### Ethanol

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Not available  
4-Methyl-2-pentanone  
Not available  
n-Propyl Acetate  
None known  
2-Propanol  
Not available

**Mobility in soil:**

Methyl propyl ketone  
None known  
Ethanol  
Not available  
4-Methyl-2-pentanone  
Not available  
n-Propyl Acetate  
None known  
2-Propanol  
Not available

**13 Disposal considerations**

Scrap materials may be disposed by licensed contractor or burn 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	:
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) Solvent, dye MSDS
- 2) Results of Eco-toxicity tests of chemicals conducted by Ministry of the Environment in Japan (-2006)
- 3) International Chemical Safety Cards

---

To the best of our knowledge, the information contained here in is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.