

SAFETY DATA SHEET

1 IDENTIFICATION

Product name : TH-96
 Name of company : Hitachi Industrial Equipment Systems Co., Ltd
 Address : 1-1, Higashitaga-cho 1-chome, Hitachi-shi, Ibaraki-ken, Japan
 Tel : +81-294-36-8682
 Fax : +81-294-36-8975
 Recommended use of the chemical
 and restrictions on use : Printing Ink for industrial Marking

2 HAZARDS IDENTIFICATION

Physico-chemical endpoints : Flammable liquid Category 2
 Acute toxicity - oral : Category 5
 Acute toxicity - dermal : Category 5
 Acute toxicity - inhalation (air) : Not available
 Acute toxicity - inhalation (vapors) : Not available
 Acute toxicity - inhalation (dust, mist) : Not available
 Skin corrosion/irritation : Category 2
 Eye damage/irritation : Category 2
 Sensitization - respiratory : Not identified
 Sensitization - skin : Not identified
 Germ cell mutagenicity : Category 1
 Carcinogenicity : Category 2
 Toxic to reproduction : Category 1
 Effects on or via lactation : Not identified
 Specific target organ systemic toxicity : (Single exposure)
 Category 1 Central nervous system
 Category 2 Kidney
 Category 3 Respiratory tract irritation
 Category 3 Anesthetizing action
 :(Repeated exposure)
 Category 1 Liver
 Category 1 Central nervous system
 Category 2 Blood
 Category 2 Nervous system
 Category 2 Spleen
 Aspiration toxicity : Category 2
 Hazardous to the aquatic environment
 -Acute hazard : Not identified
 -Chronic hazard : Not available

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 vapor
- May be harmful if swallowed
- May be harmful in contact with skin
- Causes skin irritation
- Causes serious eye irritation
- May cause genetic defects
- Suspected of causing cancer
- May damage fertility or the unborn child
- Causes damage to central nervous system-single exposure
- May cause damage to kidney-single exposure
- May cause damage to airway irritant, drowsiness or dizziness-single exposure
- Causes damage to liver and central nervous system through prolonged or repeated exposure
- May cause damage to arterial system, nervous or spleen through prolonged or repeated exposure
- May be harmful if swallowed and enters airways

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, CO₂, 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

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.

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.

3 Composition/information on ingredients

Substance or mixture; mixture

Composition:

Chemical name	concentration (%)	CAS number
2-butanone	75-85	78-93-3
Ethanol	15-25	64-17-5
1-Propanol	<5	71-23-8
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, CO₂, water splay (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.

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.

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.

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)	
2-butanone	:200
Ethanol	:1000
1-Propanol	:200(skin)
2-Propanol	:200

ACGIH STEL(ppm)	
2-butanone	:300
Ethanol	:No data
1-Propanol	:400(skin)
2-Propanol	:400

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Clear
Odor	:Solvent odor
Boiling point ²⁾	:78-80°C
Flash point	:-5.0°C (closed cup)
Upper/lower flammability or explosive limits ²⁾	:Lower 1.7 vol%、Upper 19.0 vol%
Vapor pressure ²⁾	:9.5kPa (20°C)
Vapor density (Air=1) ²⁾	:2.3
Relative density	:0.80(20°C)

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.

Solubility (Water) ²⁾	:29g/100mL (20°C) (2-butanone)
Partition coefficient: n-octanol/water ²⁾	:0.29 (2-butanone)
Auto-ignition temperature ²⁾	:439°C
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

11 Toxicological information

Acute toxicity:

2-butanone

- LD50(ori, rat): 2737mg/kg(TXAPA9 19, 699, 1971)
- LCLo(ihl, rat): 23500mg/m³/8h(AIHAAP 20, 364, 1959)
- LD50(skin, rabbit): 6480mg/kg(SHELL* MSDS-5390-4)
- TCLo(ihl, human): 1000mg/m³(VCGVK* -, 417, 1994)
- LDLo(ori, human): 714.3mg/kg(VCGVK* -, 417, 1994)

Ethanol

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

1-Propanol

- LDLo(ori, woman): 5700mg/kg(ATXKA8 16,84,1956)
- LD50(ori, 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(ori, rat): 5000mg/kg(VCGVK* -, 97, 1984)
- LC50(ihl, rat): 72600mg/m³(VCGVK* -, 97, 1984)
- LC50(ihl, mouse): 53000mg/m³(VCGVK* -, 97, 1984)
- TDLo(ori, human): 286mg/kg(VCGVK* -, 97, 1984)

Skin corrosion/irritation:

2-butanone

- Skin; rabbit; 402mg/24h; Mild(TXAPA9 19, 276, 1971)

Ethanol

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

1-Propanol

- Skin; rabbit; 500mg; Mild(UCDS** 6/28/1972)
- Skin; human; 100%/24h; Mild(CODEDGE 39, 240, 1998)
- Skin; human, erythema(EHC 102, 1990)

2-Propanol

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

Serious eye damage/irritation:

2-butanone

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.

Eye; rabbit; 80mg(TXAPA9 19, 276, 1971)
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)

Respiratory or skin sensitization:

2-butanone
Not available
Ethanol
Not available
1-Propanol
Not available
2-Propanol
Not available

Germ cell mutagenicity:

2-butanone
Reverse mutation assay in *S.typhimuriun* and *E.coli*; Negative
Sex chromosome loss and nondisjunction; *S.cerevisiae*; 33800ppm(MUREAV 149, 339, 1985)
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(ori,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)

Carcinogenicity:

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

Reproductive toxicity:

2-butanone
TCLo(ihl,rat): 2900mg/m³(female 6-10 D preg); Specific Developmental Abnormalities - craniofacial(VCVGK* -, 418, 1994)
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): 22.5mg/kg(female 11-20 D preg); Specific Developmental Abnormalities - Central

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.

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(ori,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)

STOST-single exposure:

2-butanone

The influence of the central nervous system, rat/mouse(EHC 143, 1992; PATTY 4th, 1994; IRIS 2003)

The influence of kidney, oral, rat(DFGOT vol 12,1999; IRIS 2003; ATSDR 1992)

The respiratory tract irritation, human (ACGIH 7th, 2001; DFGOT vol 12,1999; PATTY 4th, 1994; ATSDR 1992)

Ethanol

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

1-Propanol

Rat, mouse, rabbit, ihl or ori, anesthesia(ACGIH 2004: EHC 102, 1990: PATTY 4th 1994)

Mouse, ihl, the respiratory tract irritation (EHC 102,1990)

2-Propanol

Not available

STOST-repeated exposure:

2-butanone

The sensory paralysis of hand and arm, human(EHC 143, 1992; DFGOT vol 12, 1999; IRIS 2003)

The damage of central nervous system, human(DFGOT vol 12, 1999; IRIS 2003)

Ethanol

Not available

1-Propanol

Not available

2-Propanol

Not available

Aspiration hazard:

2-butanone

Not available

Ethanol

Not available

1-Propanol

Not available

2-Propanol

Not available

12 Ecological information

Ecotoxicity¹⁾:

2-butanone

mosquito fish(96h-LC50(mg/L)):5600

daphnids(48h-LC50(g/L)):>1000

Ethanol

daphnids(48h-LC50(g/L)):5463.9(ECETOC TR91 2003)

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.

- 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

Persistence and degradability:

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

Bioaccumulative potential:

- 2-butanone
 - Not available
- Ethanol
 - Not available
- 1-Propanol
 - Not available
- 2-Propanol
 - Not available

Mobility in soil:

- 2-butanone
 - Not available
- Ethanol
 - Not available
- 1-Propanol
 - Not available
- 2-Propanol
 - 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

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.

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

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.