

SAFETY DATA SHEET

1 IDENTIFICATION

Product name : TH-73
 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
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 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 : Not available
 Acute toxicity - inhalation (air) : Not available
 Acute toxicity - inhalation (vapors) : Category 5
 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 : Not identified
 Carcinogenicity : Not available
 Toxic to reproduction : Category 1
 Effects on or via lactation : Not identified
 Specific target organ systemic toxicity : (Single exposure)
 Category 1 Sensory system
 Category 1 Systemic toxicity
 Category 1 Central nervous system
 Category 2 Kidney
 Category 3 Respiratory tract irritation
 :(Repeated exposure)
 Category 1 liver
 Category 1 Sensory system
 Category 1 Organum auditus
 Category 1 Central nervous system
 Category 1 Peripheral nervous system
 Category 2 Nervous
 Aspiration toxicity : Category 2
 Hazardous to the aquatic environment
 -Acute hazard : Not available
 -Chronic hazard : Not available

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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 if inhaled
- Causes skin irritation
- Causes serious eye irritation
- May damage fertility or the unborn child
- Causes damage to Sensory system, systemic toxicity or central nervous system-single exposure
- May cause damage to kidney-single exposure
- May cause redamage to airway irritant-single exposure
- Causes damage to liver, central nervous system, organum auditus, sensory system or peripheral nervous system through prolonged or repeated exposure.
- May cause damage to nervous 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 easy to do. Continue rinsing. Immediately call a doctor/physician.
- Collect spillage.

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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	80-90	78-93-3
Ethanol	1-10	64-17-5
Methanol	1-3	67-56-1
1-butanol	1-3	71-36-3

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 form.

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;

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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
Methanol	:200(skin)
1-butanol	:20(skin)
ACGIH STEL(ppm)	
2-butanone	:300
Ethanol	:No data
Methanol	:250(skin)
1-butanol	:None known

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Clear
Odor	:Solvent odor
Boiling point ²⁾	:80°C (2-butanone)
Flash point	:-4.0°C (closed cup)
Upper/lower flammability or explosive limits ²⁾	:Lower 1.8 vol%、Upper 11.5 vol% (2-butanone)
Vapor pressure ²⁾	:10.5kPa (20°C) (2-butanone)
Vapor density (Air=1) ²⁾	:2.41 (2-butanone)
Relative density	:0.81(20°C)
Solubility (Water) ²⁾	:29g/100mL (20°C) (2-butanone)
Partition coefficient: n-octanol/water ²⁾	:0.29 (2-butanone)

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Auto-ignition temperature ²⁾	:505°C (2-butanone)
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(VCVGK* -, 417, 1994)
- LDLo(ori,human): 714.3mg/kg(VCVGK* -, 417, 1994)

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)

Methanol

- LD50(ori,rat): 5628mg/kg(GTPZAB 19(11),27,1975)
- LC50(ihl,rat): 64000ppm/4h(NPIRI* 1,74,1974)
- TDLo(ori,man): 9450µL/kg(AJEMEN 16,538,1998)
- TCLo(ihl,human): 300ppm(NPIRI* 1,74,1974)

1-butanol

- TCLo(ihl,human): 25ppm(JIHTAB 25,282,1943)
- LD50(ori,rat): 790mg/kg(SAMJAF 43,795,1969)
- LC50(ihl,rat): 8000ppm/4h(NPIRI* 1,10,1974)
- LD50(skin,rabbit): 3400mg/kg(NPIRI* 1,10,1974)
- LD50(ori,rat): 1227mg/kg(Calculate)
- LD50(skin,rabbit): 3636mg/kg(Calculate)
- LD50(ihl,rat): 24.2mg/L/4h(Calculate)

Skin corrosion/irritation:

2-butanone

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

Ethanol

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

Methanol

Skin; rabbit; 20mg/24h; Moderate(85JCAE -,187,1986)

1-butanol

Skin; rabbit; 20mg/24h; Moderate(85JCAE -,193,1986)

Serious eye damage/irritation:

2-butanone

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

Ethanol

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rabbit; 100mg/4S; Moderate(FCTOD7 20,573,1982)
Methanol
Eye; rabbit; 100mg/24h; Moderate(85JCAE -,187,1986)
1-butanol
Eye; rabbit; 2mg/24h; Severe(85JCAE -,193,1986)

Respiratory or skin sensitization:

2-butanone
Not available
Ethanol
Not available
Methanol
Allergic dermatitis; human, skin(PATTY 4th,1994)
No skin sensitization ;Magnusson-Kligman maximization test, guinea pig(EHC 196,1997: DFGOT vol. 16,2001)
1-butanol
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)
Methanol
Mutation in microorganisms; mouse; lymphocyte; 7900mg/L(ENMUDM 7(Suppl 3),10,1985)
1-butanol
Sex chromosome loss and nondisjunction; hamster; lung; 100mmol/L(MUREAV 182,135,1987)

Carcinogenicity:

2-butanone
Not available
Ethanol
TDLo(ori,mouse): 320mg/kg/50W-I(CALEDQ 13,345,1981)
Methanol
Not available
1-butanol
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 Nervous Systems(NETEEC 24, 719, 2002)
Methanol

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TCLo(ihl,rat): 10000ppm/7h(7-15 D preg)(FAATDF 5,727,1985)

TDLo(ori,rat): 5200µL/kg(10 D preg)(REPTED 11,503,1997)

1-butanol

TDLo(ori,rat): 35295mg/kg(1-15 D preg)(ONGZAC 22(1),71,1991)

TCLo(ihl,rat): 6000ppm/7h(1-19 D preg)(FAATDF 12,469,1989)

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)

Methanol

The restraint of central nervous system and damage of the visual organ, human, oral or ihl(EHC 196,1997; ACGIH, 7th,2001; DFGOT vol.16, 2001),

The respiratory tract irritation, rat,(EHC 196,1997; PATTY 4th,1994),

Anesthesia, rat , mouse and rhesus monkey(EHC 196,1997;PATTY 4th,1994)

1-butanol

Human; ihl, Mild in throat(DFGOT vol 19, 2003)

Animal; anesthesia, bridle of central nervous system(SIDS, 2004, EHC 65, 1987, ACGIH, 2002, DFGOT vol 19, 2003, PATTY 4th, 1994)

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

Methanol

The restraint of central nervous system and damage of the visual organ, human, oral or ihl(EHC 196,1997; ACGIH, 7th,2001; DFGOT vol.16, 2001),

The respiratory tract irritation, rat,(EHC 196,1997; PATTY 4th,1994),

Anesthesia, rat , mouse and rhesus monkey(EHC 196,1997;PATTY 4th,1994)

1-butanol

Human; exposure, giddiness and headache(EHC 65, 1987, ACGIH, 2002, DFGOT vol 19, 2003, PATTY 4th, 1994)

Human; exposure, audiometric hearing loss(EHC 65, 1987, ACGIH, 2002, DFGOT vol 19, 2003, PATTY 4th, 1994)

Aspiration hazard:

2-butanone

Not available

Ethanol

Not available

Methanol

Not available

1-butanol

Not available

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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)

Methanol

Not available

1-butanol

orange-red killifish(96h-LC50(mg/L)):>100

daphnids(48h-EC50(mg/L)):>1000

Persistence and degradability:

2-butanone

Not available

Ethanol

This material is biodegradable.

Methanol

This material is biodegradable.

1-butanol

This material is biodegradable.

Bioaccumulative potential:

2-butanone

Not available

Ethanol

Not available

Methanol

Not available

1-butanol

Not available

Mobility in soil:

2-butanone

Not available

Ethanol

Not available

Methanol

Not available

1-butanol

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.

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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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