

# SAFETY DATA SHEET

## 1 IDENTIFICATION

Product name :TH-84  
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 identified  
Acute toxicity - inhalation (vapors) : Category 5  
Acute toxicity - inhalation (dust, mist) : Not identified  
Skin corrosion/irritation : Category 2  
Eye damage/irritation : Category 2  
Sensitization - respiratory : Not identified  
Sensitization - skin : Not available  
Germ cell mutagenicity : Not available  
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 Sensory system  
Category 1 Central nervous system  
Category 1 Peripheral nervous system  
Category 2 Blood  
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 in contact with skin
- 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 damage to airway irritant-single exposure
- Causes damage to Sensory system, central nervous system or peripheral nervous system through prolonged or repeated exposure.
- May cause damage to blood 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, 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

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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	90-100	78-93-3
Methanol	1-3	67-56-1
Acetone	1-3	67-64-1
2-Butoxyethanol	<1	111-76-2

### 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.

**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.

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**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
Methanol	:200(skin)
Acetone	:500(skin)
2-Butoxyethanol	:20 (skin)

ACGIH STEL(ppm)

2-butanone	:300
Methanol	:250(skin)
Acetone	:750(skin)
2-Butoxyethanol	:None known

**9 Physical and chemical properties**

Appearance

Physical state :Liquid

Color :Clear

Odor :Solvent odor

Boiling point<sup>2)</sup> :80°C (2-butanone)

Flash point :-6.3°C (closed cup)

Upper/lower flammability or explosive limits<sup>2)</sup> :Lower 1.8 vol%、Upper 11.5 vol% (2-butanone)

Vapor pressure<sup>2)</sup> :10.5kPa (20°C) (2-butanone)

Vapor density (Air=1)<sup>2)</sup> :2.41 (2-butanone)

Relative density :0.81(20°C)

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Solubility (Water) <sup>2)</sup>	:29g/100mL (20°C) (2-butanone)
Partition coefficient: n-octanol/water <sup>2)</sup>	:0.29 (2-butanone)
Auto-ignition temperature <sup>2)</sup>	: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/m<sup>3</sup>/8h(AIHAAP 20, 364, 1959)
- LD50(skin, rabbit): 6480mg/kg(SHELL\* MSDS-5390-4)
- TCLo(ihl, human): 1000mg/m<sup>3</sup>(VCVGK\* -, 417, 1994)
- LDLo(ori, human): 714.3mg/kg(VCVGK\* -, 417, 1994)

#### 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)

#### Acetone

- TDLo(ori, man): 2857mg/kg (RTECS)
- LD50(ori, rat): 5800mg/kg (RTECS)
- TCLo(ihl, man): 10mg/m<sup>3</sup>/6h (RTECS)
- LC50(ihl, mouse): 44mg/m<sup>3</sup>/4h (RTECS)

#### 2-Butoxyethanol

- TDLo(ori, woman): 600mg/kg(HUTODJ 7, 187, 1988)
- TCLo(ihl, human): 100ppm(NPIRI 1, 50, 1974)
- LD50(ori, rat): 470mg/kg(DOWCC\* MSD-46)
- LC50(ihl, rat): 450ppm/4h(TXAPA9 68, 405, 1983)
- LD50(ori, rat): 1746mg/kg(SIDS, 1997)
- LD50(skin, rabbit): 610, 99, 435mg/kg(SIDS, 1997)
- LD50(skin, rabbit): 135mg/kg(Calculated)
- LC50(ihl, rat): 2.4mg/L/4H(SIDS, 1997)
- LC50(ihl, rat): 2.2mg/L/4H(SIDS, 1997)

### Skin corrosion/irritation:

#### 2-butanone

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

#### Methanol

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

#### Acetone

- Skin; rabbit; 500mg/24h; Mild(85JCAE -, 280, 1986)

#### 2-Butoxyethanol

- Skin; rabbit; 500mg; Mild(UCDS)

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rabbit; ;irritating(SIDS,1997)

**Serious eye damage/irritation:**

2-butanone

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

Methanol

Eye; rabbit; 100mg/24h; Moderate(85JCAE -,187,1986)

Acetone

Eye; rabbit; 20mg; Severe(AJOPAA 29,1363,1946) Eye; rabbit; 20mg/24h; Severe(85JCAE -,280,1986)

2-Butoxyethanol

Eye; rabbit; 100mg/24h; Moderate (85JCAE -,629,1986)  
rabbit; ; Severe(SIDS,1997; ECETOCTR,1998)

**Respiratory or skin sensitization:**

2-butanone

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)

Acetone

Not available

2-Butoxyethanol

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)

Methanol

Mutation in microorganisms; mouse; lymphocyte; 7900mg/L(ENMUDM 7(Suppl 3),10,1985)

Acetone

Cytogenetic analysis; hamster; fibroblast; 40mg/l(FCTOD7 22,623,1984)

2-Butoxyethanol

Mutation in microorganisms; *S.typhimurium*; 19µmol/plate(MUREAV 341,281,1995)

Specific locus test; rat; ihl; 0.5ppb(EMMUEG 39,69,2002)

**Carcinogenicity:**

2-butanone

Not available

Methanol

Not available

Acetone

Not listed as carcinogen on NTP, IARC, OSHA, ACGIH. Negative results on EHC, SIDS.

2-Butoxyethanol

Not available

**Reproductive toxicity:**

2-butanone

TCLo(ihl,rat): 2900mg/m<sup>3</sup>(female 6-10 D preg); Specific Developmental Abnormalities -

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craniofacial(VCVGK\* -, 418, 1994)

**Methanol**

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)

**Acetone**

TDLo(ori, rat): 273mg/kg(13 W male)(NTIS\*\* PB91-185975)

TCLo(ihl, mammal): 31500µg/m<sup>3</sup>/24h(1-13D preg); (GTPZAB 26(6),24,1982)

**2-Butoxyethanol**

TDLo(ori, mouse): 9440mg/kg(7-14D preg): Fertility - post-implantation mortality(EVHPAZ 57,141,84)

TDLo(ori, rat): 6279mg/kg(13 W male)(NTPTR\* NIH-93-3349)

**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)

**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)

**Acetone**

Human, irritation of throat 12000ppm(ACGIH, 2001) ; Human irritation of throat, nose and trachea 1190mg/m<sup>3</sup>/6h(EHC 207, 1998); Human, irritation of throat 1000ppm/4h(EHC 207, 1998)

**2-Butoxyethanol**

Animal: Influence on the red blood corpuscle (SIDS,1997) Human: Symptoms such as not only influence on blood but also sopor, vertigo, respiratory distress, metabolic acidosis, urina cruentas, and liver function decreased such as haemoglobin, erythrocytopenias, and haemoglobinurias (SIDS (1997))

**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)

**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)

**Acetone**

The increase of white blood cell and eosinophile leukocyte(ACGIH, 2001)

**2-Butoxyethanol**

Human: Change in the blood parameter after the repeated exposure (CaPSAR,1999),(HSDB,2004)

**Aspiration hazard:**

**2-butanone**

Not available

**Methanol**

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Not available  
Acetone  
Classified into Category 2 due to be the ketone of under C13.  
2-Butoxyethanol  
Not available

## 12 Ecological information

### Ecotoxicity<sup>1)</sup>:

2-butanone  
mosquito fish(96h-LC50(mg/L)):5600  
daphnids(48h-LC50(g/L)):>1000  
Methanol  
Not available  
Acetone  
Salmo gairdneri(96h-LC50(mg/L)):5540(at 12°C= 54 °F)  
2-Butoxyethanol  
orange-red killifish(96h-LC50(mg/L)):>100  
daphnids(48h-EC50(mg/L)):>1000  
grass shrimp(96h-LC50(mg/L)):5.4(CICAD,1998)

### Persistence and degradability:

2-butanone  
Not available  
Methanol  
This material is biodegradable.  
Acetone  
This material is biodegradable  
2-Butoxyethanol  
This material is biodegradable.

### Bioaccumulative potential:

2-butanone  
Not available  
Methanol  
Not available  
Acetone  
Not available  
2-Butoxyethanol  
Not available

### Mobility in soil:

2-butanone  
Not available  
Methanol  
Not available  
Acetone  
Not available  
2-Butoxyethanol  
Not available

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### 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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