

MATERIAL SAFETY DATA SHEET

1 IDENTIFICATION

Product name :TH-25
 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 :Not available
 Acute toxicity - inhalation (air) :Not identified
 Acute toxicity - inhalation (vapors) :Not available
 Acute toxicity - inhalation (dust, mist) :Not identified
 Skin corrosion/irritation :Not identified
 Eye damage/irritation :Category 2
 Sensitization - respiratory :Not identified
 Sensitization - skin :Not identified
 Germ cell mutagenicity :Category 2
 Carcinogenicity :Not identified
 Toxic to reproduction :Category 1
 Effects on or via lactation :Not identified
 Specific target organ systemic toxicity
 (Single exposure) :Category 1 Sensory system, Liver
 :Category 1 Systemic toxicity, Spleen
 :Category 1 Central nervous system
 :Category 2 Lungs
 :Category 3 Respiratory system, anesthetizing action
 (Repeated exposure) :Category 1 Sensory system, Liver
 :Category 1 Central nervous system, Kidney
 :Category 1 Peripheral nervous system
 Aspiration toxicity :Not identified
 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 vapour
- May be harmful if swallowed
- Suspected of causing genetic defects
- May damage fertility or the unborn child
- Causes damage to Sensory system, liver, systemic toxicity, spleen and central nervous system-single exposure
- May cause damage to Lungs -single exposure
- May cause respiratory irritation,drowsiness or dizziness-single exposure
- Causes damage to sensory system, liver, central nervous system, kidney and peripheral 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, 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.

Storage

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- 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
Methanol	50-60	67-56-1
2-butanone	40-50	78-93-3
Cyclohexanone	<5	108-94-1

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, CO₂, 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.

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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)

Methanol :200(skin)

2-butanone :200

Cyclohexanone :25(skin)

ACGIH STEL(ppm)

Methanol :250(skin)

2-butanone :300

Cyclohexanone :None known

9 Physical and chemical properties

Appearance

Physical state

:Liquid

Color

:Clear

Odor

:Solvent odor

Boiling point

: 65 (methanol)

Flash point

:-1.0 (closed cup)

Upper/lower flammability or explosive limits

:Lower 5.5 vol%, Upper 44 vol%(methanol)

Vapor pressure

: 12.3kPa (20)(methanol)

Vapor density (Air = 1)

:2.1(methanol)

Relative density

:0.81(20)

Solubility (Water)

:-0.82/-0.66(methanol)

Partition coefficient: n-octanol/water

:-0.32(methanol)

Auto-ignition temperature

:390 (methanol)

Decomposition temperature

:No data

10 Stability and reactivity

Stability: The product is stable.

Conditions and materials to avoid: Not available

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Hazardous decomposition products: These products are carbon oxides

11 Toxicological information

Acute toxicity;

Methanol

LD50(ori,rat): 5628mg/kg(GTPZAB 19(11),27,1975)

LC50(ihl,rat): 64000ppm/4H(NPIRI* 1,74,1974)

TDLo(ori,man): 9450?L/kg(AJEMEN 16,538,1998)

TCLo(ihl,human): 300ppm(NPIRI* 1,74,1974)

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)

Cyclohexanone

LD50(ori,rat): 1800mg/kg(VCVGK* -, 455, 1994)

LC50(ihl,rat): 19000mg/m3(VCVGK* -, 455, 1994)

LD50(skin,rabbit): 1mL/kg(AIHAAP 30, 470, 1969)

LDLo(ori,human): 714.3mg/kg(VCVGK* -, 455, 1994)

TCLo(ihl,human): 0.09mg/m3(VCVGK* -, 455, 1994)

Skin corrosion/irritation;

Methanol

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

2-butanone

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

Cyclohexanone

Skin; rabbit; 500mg; Mild; Open(UCDS**)

Skin; human; 50%/48H; Mild(ADVEA4 27, 189, 1992)

Serious eye damage/irritation;

Methanol

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

2-butanone

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

Cyclohexanone

Eye; rabbit; 250?g/24H; Severe(85JCAE -,289,1986)

Respiratory or skin sensitization;

Methanol

Allergic dermatitis; human, skin(PATTY 4th,1994)

No skin sensitization ;Magnusson-Kligman maximization test, guinea pig(EHC 196,1997: DFGOT vol. 16,2001)

2-butanone

Not available

Cyclohexanone

Skin; rabbit; 500mg; Mild; Open(UCDS**)

Skin; human; 50%/48H; Mild(ADVEA4 27, 189, 1992)

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Germ cell mutagenicity;

Methanol

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

2-butanone

Reverse mutation assay in *S.typhimuriun* and *E.coli*; Negative

Sex chromosome loss and nondisjunction; *S.cerevisiae*; 33800ppm(MUREAV 149, 339, 1985)

Cyclohexanone

Mutation in microorganisms; *S.typhimurium*; cells; 20?L/L(EJMBA2 18,213,1983)

Cytogenetic analysis; human; lymphocyte; 5?g/L(GISAAA 46(5), 76, 1981)

Mutation in mammalian somatic cells; hamster; ovary; 7500?L/L(ENMUDM 7(Suppl 3), 60, 1985)

Carcinogenicity;

Methanol

Not available

2-butanone

Not available

Cyclohexanone

Not available

Reproductive toxicity;

Methanol

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

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

2-butanone

TCLo(ihl,rat): 2900mg/m3(female 6-10 D preg); Specific Developmental Abnormalities - craniofacial(VCVGK* -, 418, 1994)

Cyclohexanone

TCLo(ihl,rat): 105mg/m3/4H(1-20 D preg); Fertility - pre - implantation mortality(TPKVAL 14,26,1975)

TDLo(ori,mouse): 11mg/kg(8-12 D preg); Effects on Newborn - growth statistics(TCMUD8 6,361,1986)

STOST-single exposure;

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)

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)

Cyclohexanone

None known

STOST-repeated exposure;

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),

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Anesthesia, rat , mouse and rhesus monkey(EHC 196,1997;PATTY 4th,1994)
 2-butanone
 The sensory paralysis of hand and arm, human(EHC 143, 1992; DFGOT vol 12, 1999; IRIS 2003)
 The dmade of central nervous system, human(DFGOT vol 12, 1999; IRIS 2003)
 Cyclohexanone
 None known

Aspiration hazard.

Methanol
 Not available
 2-butanone
 Not available
 Cyclohexanone
 None known

12 Ecological information**Toxicity :**

Methanol
 LD50(ori, rat): 5628mg/kg(GTPZAB 19(11),27,1975)
 LC50(ihl, rat): 64000ppm/4H(NPIRI* 1,74,1974)
 TDLo(ori, man): 9450?L/kg(AJEMEN 16,538,1998)
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 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)
 Cyclohexanone
 LD50(ori, rat): 1800mg/kg(VCVGK* -, 455, 1994)
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 LD50(skin, rabbit): 1mL/kg(AIHAAP 30, 470, 1969)
 LDLo(ori, human): 714.3mg/kg(VCVGK* -, 455, 1994)
 TCLo(ihl, human): 0.09mg/m3(VCVGK* -, 455, 1994)

Persistence and degradability:

Methanol
 This material is biodegradable.
 2-butanone
 Not available
 Cyclohexanone
 This material is biodegradable.

Bioaccumulative potential:

Methanol
 Not available
 2-butanone
 Not available

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Cyclohexanone
Not available

Mobility in soil:

Methanol
Not available
2-butanone
Not available
Cyclohexanone
None known

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

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