MATERIAL SAFETY DATA SHEET

1 IDENTIFICATION

Product name	:TH-81
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	:Not available
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 available
Eye damage/irritation	: Category 2
Sensitization - respiratory	: Not identified
Sensitization - skin	: Not available
Germ cell mutagenicity	: Category 1
Carcinogenicity	: Not available
Toxic to reproduction	: Category 1
Effects on or via lactation	: Not identified
Specific target organ systemic toxicity	: (Single exposure) Category 3 Respiratory system,anesthetizing action :(Repeated exposure) Category 1 Liver Category 2 Blood Category 2 Nervous :
Aspiration toxicity	: Category 2
Hazardous to the aquatic environment	
-Acute hazard	: Not available
-Chronic hazard	: Not available

GHS label elements

Hazard symbols:

Signal word: Danger

Hazard statement and precautionary statement:

- Highly flammable liquid and vapour
- May cause respiratory irritation, drowsiness or dizziness-single exposure
- Causes damage to liver through prolonged or repeated exposure
- May cause damage to blood and 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_2, water splay (fog) or form 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.

Disposal

- Waste must be disposed of according to applicable regulations.

3 Composition/information on ingredients

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.

Substance or mixture; mixture
Composition;

Chemical name	concentration (%)	CAS number
Acetone	90-100	67-64-1
Ethanol	1-10	64-17-5
n-Propyl Acetate	<1	109-60-4

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 neatest medial 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 son 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 medial attention.

5 Fire-fighting measures

Suitable extinguishing media;
Use dry chemical, CO_2, 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;
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℃) place.
Keep away from combustible materials and sources of ignition.

8 Exposure controls/personal protection

Exposure guidelines;

ACGIH TLV-TWA (ppm)

Acetone	:0
Ethanol	:1000
n-Propyl Acetate	:200

ACGIH STEL(ppm)

Acetone	:750(skin)
Ethanol	:No data
n-Propyl Acetate	:250

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Clear
Odor	:Solvent odor
Boiling point	:56℃
Flash point	:-16.0℃ (closed cup)
Upper/lower flammability or explosive limits	:Lower 2.6 vol%、Upper 12.8 vol%
Vapor pressure	:24.6kPa (20℃)
Vapor density (Air＝1)	:None known
Relative density	:0.79(20℃)
Solubility (Water)	:None known
Partition coefficient: n-octanol/water	:None known
Auto-ignition temperature	:465℃
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;
Acetone
TDLo(orl,man): 2857mg/kg (RTECS)

LD50(orl,rat): 5800mg/kg (RTECS)
TCLo(ihl,man): 10mg/m3/6H (RTECS)
LC50(ihl,mouse): 44gm/m3/4H (RTECS)
Ethanol
TDLo(orl,man): 700mg/kg(NTOTDY 8,77,1986)
LD50(orl,rat): 9000mg/kg(VCVGK* -, 93, 1984)
LC50(ihl,rat): 20000ppm/10H(NPIRI* 1,44,1974
TCLo(ihl,human): 2500mg/m3/20M(VCVGK* -, 93,1984)
n-Propyl Acetate
DERMAL LD50: >20 mL/kg (rabbit)
ORAL LD50: 9370 mg/kg (rat)
INHALATION LC50: 8000 ppm (rat, 4 hrs.)

Skin corrosion/irritation;
Acetone
Skin; rabbit; 500mg/24H; Mild(85JCAE -,280,1986)
Ethanol
Skin; rabbit; 20mg/24H; Moderate(85JCAE -, 189, 1986)
n-Propyl Acetate
Prolonged or repeated contact may cause drying, cracking, or irritation.

Serious eye damage/irritation;
Acetone
Eye; rabbit; 20mg; Severe(AJOPAA 29,1363,1946) Eye; rabbit; 20mg/24H; Severe(85JCAE -,280,1986)
Ethanol
rabbit; 100mg/4S; Moderate(FCTOD7 20,573,1982)
n-Propyl Acetate
May cause moderate burning, tearing, redness and swelling.

Respiratory or skin sensitization;
Acetone

Ethanol
Not available
n-Propyl Acetate
None known

Germ cell mutagenicity;
Acetone
Cytogenetic analysis; hamster; fibroblast; 40gm/l(FCTOD7 22,623,1984)
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)
n-Propyl Acetate
None known

Carcinogenicity;
Acetone
Not listed as carcinogen on NTP, IARC, OSHA, ACGIH. Negative results on EHC, SIDS.
Ethanol

TDLo(orl,mouse): 320mg/kg/50W-I(CALEDQ 13,345,1981)
n-Propyl Acetate
IARC: Not listed by IARC
NTP: Not listed by NTP.
OSHA: Not listed by OSHA

Reproductive toxicity;
Acetone
TDLo(orl,rat): 273gm/kg(13 W male)(NTIS** PB91-185975)
TCLo(ihl,mammal): 31500µg/m3/24H(1-13D preg); (GTPZAB 26(6),24,1982)
Ethanol
TDLo(orl,woman): 250mg/kg(37 W preg); Effects on Embryo or Fetus - other effects to embryo(AJOGAH 145,251,1983)
TDLo(orl,rat): 22.5gm/kg(female 11-20 D preg); Specific Dveropmental Abnormalities - Central Nervous Systems(NETEEC 24, 719, 2002)
n-Propyl Acetate
None known

STOST-single exposure;
Acetone
Human, irritation of throat 12000ppm(ACGIH, 2001) ; Human irritation of throat, nose and trachea 1190mg/m3/6h(EHC 207, 1998); Human, irritation of throat 1000ppm/4h(EHC 207, 1998)
Ethanol
Human ihl, 5000ppm(9,4mg/L), respiratory tract irritation and confusion(ACGIH 2001)
n-Propyl Acetate
None known

STOST-repeated exposure;
Acetone
The increase of white blood cell and eosinophile leukocyte(ACGIH, 2001)
Ethanol
Not available
n-Propyl Acetate
None known

Aspiration hazard.
Acetone
Classified into Category 2 due to be the ketone of under C13.
Ethanol
Not available
n-Propyl Acetate
None known

12 Ecological information

Toxicity:
Acetone
TDLo(orl,man): 2857mg/kg (RTECS)
LD50(orl,rat): 5800mg/kg (RTECS)
TCLo(ihl,man): 10mg/m3/6H (RTECS)
LC50(ihl,mouse): 44gm/m3/4H (RTECS)

Ethanol
TDLo(orl,man): 700mg/kg(NTOTDY 8,77,1986)
LD50(orl,rat): 9000mg/kg(VCVGK* -, 93, 1984)
LC50(ihl,rat): 20000ppm/10H(NPIRI* 1,44,1974
TCLo(ihl,human): 2500mg/m3/20M(VCVGK* -, 93,1984)
n-Propyl Acetate
DERMAL LD50: >20 mL/kg (rabbit)
ORAL LD50: 9370 mg/kg (rat)
INHALATION LC50: 8000 ppm (rat, 4 hrs.)

Persistence and degradability:
Acetone
This material is biodegradable
Ethanol
This material is biodegradable.
n-Propyl Acetate
None known

Bioaccumulative potential:
Acetone
Not available
Ethanol
Not available
n-Propyl Acetate
None known

Mobility in soil:
Acetone
Not available
Ethanol
Not available
n-Propyl Acetate
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	: **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) 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