MATERIAL SAFETY DATA SHEET

1 IDENTIFICATION

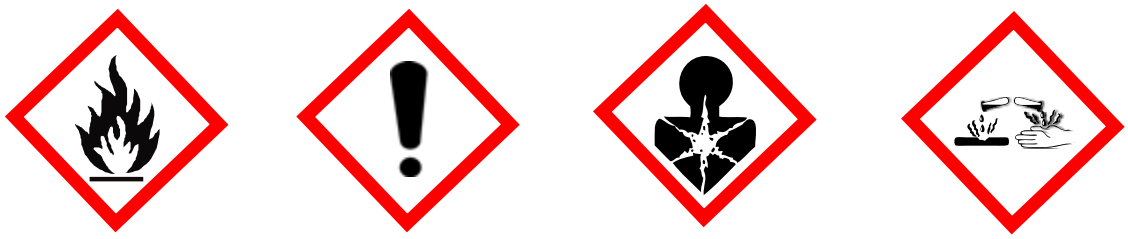
Product name	:JP-K25
Name of company	:Hitachi Industrial Equipment Systems Co., Ltd
Address	:1-1,Higashitaga-cho 1-chome, Hitachi-shi, Ibaraki-ken, Japan
Tel	:+81-294-36-8682
Fax	:+81-294-36-8975
Recommended use of the chemical and restrictions on use	:Printing Ink for industrial Marking

2 HAZARDS IDENTIFICATION

Classification of the substance or mixture	:mixture
Physico-chemical endpoints	:Flammable liquid category 2
Acute toxicity - oral	:Category 4
Acute toxicity - dermal	:Category 4
Acute toxicity - inhalation (vapors)	:Not identified
Acute toxicity - inhalation (dust, mist)	:Not identified
Skin corrosion/irritation	:Category 2
Eye damage/irritation	:Category 1
Sensitization - respiratory	:Category 1
Sensitization - skin	:Not identified
Germ cell mutagenicity	:Category 2
Carcinogenicity	:Category 2
Toxic to reproduction	:Category 1
Effects on or via lactation	:Not identified
Specific target organ systemic toxicity	
(Single exposure)	:Category 1
(Repeated exposure)	:Category 1
Aspiration toxicity	:Category 2
Hazardous to the aquatic environment	
-Acute hazard	:Category 3
-Chronic hazard	:Not identified

GHS label elements

Hazard symbols:Flame,Exclamation mark,Health hazard,Corrosion



Signal word: Danger

Hazard statement and precautionary statement:

- Highly flammable liquid and vapour
- Harmful if swallowed
- Harmful if contact with skin
- Causes skin irritation
- Causes serious eye damage
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- Suspected of causing genetic defects
- Suspected of causing cancer
- May damage fertility or the unborn child
- Causes damage to organs-single exposure
- Causes damage to organs through prolonged or repeated exposure.
- May be harmful if swallowed and enters airways
- Harmful to aquatic life

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

Substance or mixture; mixture
Composition;

Chemical name	concentration (%)	CAS number
Methanol	20-30	67-56-1
2-butanone	15-25	78-93-3
Cyclohexanone	10-20	108-94-1
Chrome**III**-Complex Dye	1-5	TSCA Registered
2-hydroxypropyl ester	1-5	999-61-1

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 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)	
Methanol	:200(skin)
2-butanone	:200
Cyclohexanone	:25(skin)
Chrome**III**-Complex Dye	:None known
2-hydroxypropyl ester	:0.5(skin)
ACGIH STEL(ppm)	
Methanol	:250(skin)
2-butanone	:300
Cyclohexanone	:None known
Chrome**III**-Complex Dye	:None known
2-hydroxypropyl ester	:None known

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Black
Odor	:Solvent odor
Boiling point	:≧64.1℃
Flash point	:6.5℃ (closed cup)
Upper/lower flammability or explosive limits	:Lower 1.8 vol%、Upper 11.5 vol% (2-butanone)
Vapor pressure	:≦12.8kPa (20℃)
Relative density (Air＝1)	:2.41 (2-butanone)
Relative density	:0.954±0.005 (20℃)
Solubility (Water)	:29g/100mL (20℃) (2-butanone)
Partition coefficient: n-octanol/water	:0.29 (2-butanone)

Auto-ignition temperature :385℃
Decomposition temperature :No measurement

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;
Methanol
Category 5:Oral 6200(Rat LD50(mg/kg))
Not available:Dermal 15800(RabbitLD50(mg/kg))
Not available:Inhalation >22500(Rat LC50(ppm/8H))
2-butanone
Category 5:Oral 5520(Rat LD50 (mg/kg))
Not available:Dermal ＞8000(Rabbit LD50 (mg/kg))
Category 5:Inhalation 11700 (Vaper) (Rat LC50(ppm/4h))
Cyclohexanone
LD50(oral,rat): 1800mg/kg
LD50(skin,rabbit): 1mL/kg
TCLo(oral,rat): 512mg/kg
Chrome**III**-Complex Dye
Oral >5000 (Rat LD50 (mg/kg))
Dermal >2000 (Rat LD50 (mg/kg))
Inhalation None known
2-hydroxypropyl ester
LD50(oral,rat): 250mg/kg
LD50(skin,rabbit): 160μL/kg
None known
Skin corrosion/irritation;
Methanol
Not identified
2-butanone
Category 2:Frequent/prolonged contact may irritate and cause dermatitis. Low order of toxicity.
Cyclohexanone
TCLo(inhalation,human): 0.09mg/m3
Chrome**III**-Complex Dye
No (Rabbit test-OECD404 1981)
2-hydroxypropyl ester
None known
Serious eye damage/irritation;
Methanol
Category 2A
2-butanone
Category 2B:Eye contact:severely irritating. If not removed promptly, will injure eye tissue, which may result in permanent damage.
Cyclohexanone

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

Chrome**III**-Complex Dye
No (Rabbit test-84/449/EEC B.5)
2-hydroxypropyl ester
None known

Respiratory or skin sensitization;
Methanol
Not identified
2-butanone
Not identified
Cyclohexanone
Skin; rabbit; 500mg; Mild; Open(UCDS**)
Skin; human; 50%/48H; Mild(ADVEA4 27, 189, 1992)
Chrome**III**-Complex Dye
No (Guinea pig test-84/449/EC B.6)
2-hydroxypropyl ester
None known

Germ cell mutagenicity;
Methanol
Not available
2-butanone
Not available
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)
Chrome**III**-Complex Dye
Not identified
2-hydroxypropyl ester
None known

Carcinogenicity;
Methanol
Not identified
2-butanone
Not available
Cyclohexanone
None known
Chrome**III**-Complex Dye
Not identified
2-hydroxypropyl ester
None known

Reproductive toxicity;
Methanol
Not identified
2-butanone
Not available
Cyclohexanone
None known
Chrome**III**-Complex Dye
Not identified

2-hydroxypropyl ester
None known

STOST-single exposure;

Methanol
Category 1(Central nervous system,Sensory system,systemic toxicity)
2-butanone
Category 1(Central nervous system),Category 2(Kidney),Category 3(Respiratory)
Cyclohexanone
None known
Chrome**III**-Complex Dye
Not identified
2-hydroxypropyl ester
None known

STOST-repeated exposure;

Methanol
Category 1(Central nervous system,sensory system)
2-butanone
Category 1(Central nervous system,Peripheral nervous system)
Cyclohexanone
None known
Chrome**III**-Complex Dye
None known
2-hydroxypropyl ester
None known

Aspiration hazard.

Methanol
Not identified
2-butanone
Category 1 Vapor concentrations above exposure
Cyclohexanone
None known
Chrome**III**-Complex Dye
None known
2-hydroxypropyl ester
None known

※LD50 (50% Lethal Dose)、LC50 (50% Lethal Concentration)

12 Ecological information

Toxicity:

Methanol
brine shrimp 24h-LC50 (mg/L):900.73
2-butanone
killifish 96h-LC50(mg/L):>100
killifish 14d-LC50 (mg/L):100
killifish 14d-NOEC (mg/L):100
Cyclohexanone
None known:None known
Chrome**III**-Complex Dye
Carp LC50 (mg/L):2

Daphnia EC50 (mg/L):1000 (Darp.Mag Straus 1820 test)
2-hydroxypropyl ester
None known

Persistence and degradability:
Methanol
None known
2-butanone
None known
Cyclohexanone
This material is biodegradable.
Chrome**III**-Complex Dye
None known
2-hydroxypropyl ester
None known

Bioaccumulative potential:
Methanol
None known
2-butanone
None known
Cyclohexanone
:Not available
Chrome**III**-Complex Dye
None known
2-hydroxypropyl ester
None known

Mobility in soil:
Methanol
None known
2-butanone
None known
Cyclohexanone
None known
Chrome**III**-Complex Dye
None known
2-hydroxypropyl ester
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