MATERIAL SAFETY DATA SHEET

1 IDENTIFICATION

Product name	:JP-K61
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 5
Acute toxicity - dermal	:Not identified
Acute toxicity - inhalation (vapors)	:Not identified
Acute toxicity - inhalation (dust, mist)	:Not identified
Skin corrosion/irritation	:Category 2
Eye damage/irritation	:Category 2
Sensitization - respiratory	:Not identified
Sensitization - skin	:Category 1
Germ cell mutagenicity	:Not identified
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	:Category 3

GHS label elements

Hazard symbols:Flame,Exclamation mark,Health hazard

Signal word: Danger

Hazard statement and precautionary statement:

- Highly flammable liquid and vapour
- May be harmful if swallowed
- Causes skin irritation
- Causes eye irritation
- May cause an allergic skin reaction
- 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
- Harmful to aquatic life with long lasting effects

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
2-butanone	65-75	78-93-3
Methanol	1-10	67-56-1
Chrome**III**-Complex Dye	1-10	TSCA Registered
toluene	<1	108-88-3
2,3-Epoxypropyl Phenyl Ether	<1	122-60-1

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)	
2-butanone	:200
Methanol	:200(skin)
Chrome**III**-Complex Dye	:None known
toluene	:20(skin)
2,3-Epoxypropyl Phenyl Ether	:0.1(skin)
ACGIH STEL(ppm)	
2-butanone	:300
Methanol	:250(skin)
Chrome**III**-Complex Dye	:None known
toluene	:No data
2,3-Epoxypropyl Phenyl Ether	:None known

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Black
Odor	:Solvent odor
Boiling point	:≧64.1℃
Flash point	:-6.0℃ (closed cup)
Upper/lower flammability or explosive limits	:Lower 1.8 vol%、Upper 37 vol%
Vapor pressure	:≦12.799kPa (20℃)
Relative density (Air＝1)	:None known
Relative density	:0.890±0.005 (20℃)
Solubility (Water)	:None known
Partition coefficient: n-octanol/water	:None known
Auto-ignition temperature	:404℃

Decomposition temperature :None known

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
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))
Methanol
Category 5:Oral 6200(Rat LD50(mg/kg))
Not available:Dermal 15800(RabbitLD50(mg/kg))
Not available:Inhalation >22500(Rat LC50(ppm/8H))
Chrome**III**-Complex Dye
Not identified:Oral No data
Not identified:Dermal No data
Not identified:Inhalation No data
toluene
Category 5:Oral 636(Rat LD50(mg/kg))
Not available:Dermal 14100(RabbitLD50(μL/kg))
Not available:Inhalation 49(Rat LC50(gm/m3/4H))
2,3-Epoxypropyl Phenyl Ether
LD50(orl,rat): 3850mg/kg(AMIHAB 14,250,1956)
LD50(skin,rabbit): 1500μL/kg(AMIHAB 10,61,1954)
LD50(ihl,rat): >100ppm/8h(AMIHAB 14,250,1956)
Skin corrosion/irritation;
2-butanone
Category 2:Frequent/prolonged contact may irritate and cause dermatitis. Low order of toxicity.
Methanol
Not identified
Chrome**III**-Complex Dye
Not identified
toluene
Category 2:Skin; rabbit; 20mg/24H; Moderate(85JCAE -, 29, 1986)
2,3-Epoxypropyl Phenyl Ether
Skin; rabbit; 20mg/24H; Moderate(85JCAE -, 776, 1986)
Serious eye damage/irritation;
2-butanone
Category 2B:Eye contact:severely irritating. If not removed promptly, will injure eye tissue, which may result in permanent damage.
Methanol
Category 2A
Chrome**III**-Complex Dye
Not identified

toluene
Category 2B:rabbit; ; Moderate(EU-RAR No.30, 2003)
2,3-Epoxypropyl Phenyl Ether
Eye; rabbit; 250µg/24H; Severe(85JCAE -, 776, 1986)

Respiratory or skin sensitization;
2-butanone
Not identified
Methanol
Not identified
Chrome**III**-Complex Dye
Not identified
toluene
Not available
2,3-Epoxypropyl Phenyl Ether
None known

Germ cell mutagenicity;
2-butanone
Not available
Methanol
Not available
Chrome**III**-Complex Dye
Not identified
toluene
Not available:Micronucleus test; mouse; ipr; 433?g/kg/24H(ARTODN 58, 106, 1985)
Sister chromatid exchange; human; ihl; 252?g/L/19Y(MUREAV 519, 171, 2002)
2,3-Epoxypropyl Phenyl Ether
Mutation test system; E.coli; 300?mol/L(MUREAV 231, 205, 1990)
Sister chromatid exchange; hamster; lung; 400?mol/L(MUREAV 249, 55, 1991)
Reverse mutation assay in S.typhimuriun and E.coli; Positive

Carcinogenicity;
2-butanone
Not available
Methanol
Not identified
Chrome**III**-Complex Dye
Not identified
toluene
Not available:TDLo(orl,rat): 16mL/kg(6-21 D preg); Effects on Newborn - phisycal(REPEBL 47, 362, 2000)
TCLo(ihl,rat): 1800ppm(7-20 D preg); Specific Developmental Abnormalities - Central Nervous System(ARTODN 75, 103, 2001)
Human; "the study suggests an increased risk of late spontaneous abortions associated with exposure to toluene at levels around 88 ppm (range 50-150 ppm). The results of this study are used as a basis for the risk characterisation of developmental toxicity in humans."(EU-RAR No.30, 2003), (IRIS 2005, IARC 71,1999, EHC 52,1986, ATSDR 2000)
2,3-Epoxypropyl Phenyl Ether
Possibly Carcinogenic to Humans (Group 2B)

Reproductive toxicity;
2-butanone
Not available
Methanol

Not identified
Chrome**III**-Complex Dye
Not identified
toluene
Category 1A
2,3-Epoxypropyl Phenyl Ether
TCLo(ihl,rat): 11 ppm/6H(19D male);(TXAPA9 64,204,1982)

STOST-single exposure;
2-butanone
Category 1(Central nervous system),Category 2(Kidney),Category 3(Respiratory)
Methanol
Category 1(Central nervous system,Sensory system,systemic toxicity)
Chrome**III**-Complex Dye
Not identified
toluene
Category 1(Central nervous system),Category 3(Respiratory system,Anesthetizing action) Human; ihl, 50-100ppm, feebleness, sleepiness, dizziness(CERI hazard sheet, 96-4,1997)
Human; ihl, 200-400ppm, paresthesia, vomiturition(CERI hazard sheet, 96-4,1997)
Human; ihl, 500-800ppm, drunkenness, derangement, gait abonormality(CERI hazard sheet, 96-4,1997)
Human: irritation for eye, nose and throat(EU-RAR No.30, 2003)
2,3-Epoxypropyl Phenyl Ether
None known

STOST-repeated exposure;
2-butanone
Category 1(Central nervous system,Peripheral nervous system)
Methanol
Category 1(Central nervous system,sensory system)
Chrome**III**-Complex Dye
Not identified
toluene
Category 1(Central nervous system,Kidney,Liver) Human; ihl, stenosis for range of vision, headache with deafness and eye nystagmus, trembling, dynamic ataxia, amnesia, cerebral atrophy, renal dysfunction(CERI hazard sheet, 96-4,1997)
Human; The increasing of SGOT, hepatotoxicity with the adipose degeneration in liver cell and lymphocyte cell wetting(EU-RAR No.30, 2003)
2,3-Epoxypropyl Phenyl Ether
None known

Aspiration hazard.
2-butanone
Category 1 (Vapor concentrations above exposure)
Methanol
Not identified
Chrome**III**-Complex Dye
Not identified
toluene
Not available
2,3-Epoxypropyl Phenyl Ether
None known

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

12 Ecological information

Toxicity:
2-butanone
killifish 96h-LC50(mg/L):>100
killifish 14d-LC50 (mg/L):100
killifish 14d-NOEC (mg/L):100
Methanol
brine shrimp 24h-LC50 (mg/L) :900.73
Chrome**III**-Complex Dye
None known
toluene
orange-red killifish 96h-LC50(mg/L):25
dephnids 48h-EC50(mg/L):4.1
2,3-Epoxypropyl Phenyl Ether
None known
Persistence and degradability:
2-butanone
None known
Methanol
None known
Chrome**III**-Complex Dye
None known
toluene
This material is biodegradable.
2,3-Epoxypropyl Phenyl Ether
None known
Bioaccumulative potential:
2-butanone
None known
Methanol
None known
Chrome**III**-Complex Dye
None known
toluene
None known
2,3-Epoxypropyl Phenyl Ether
None known
Mobility in soil:
2-butanone
None known
Methanol
None known
Chrome**III**-Complex Dye
None known
toluene
None known
2,3-Epoxypropyl Phenyl Ether
This material is biodegradable.

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