

MATERIAL SAFETY DATA SHEET

1 IDENTIFICATION

Product name :JP-W21
 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	:Not available
Acute toxicity - dermal	:Category 5
Acute toxicity - inhalation (air)	:Not identified
Acute toxicity - inhalation (vapors)	:Not available
Acute toxicity - inhalation (dust, mist)	:Not identified
Skin corrosion/irritation	:Category 2
Eye damage/irritation	:Category 2
Sensitization - respiratory	:Not identified
Sensitization - skin	:Not identified
Germ cell mutagenicity	:Category 1
Carcinogenicity	:Category 2
Toxic to reproduction	:Category 1
Effects on or via lactation	:Not identified
Specific target organ systemic toxicity (Single exposure)	:Category 1 Respiratory system,Central nervous system :Category 1 Systemic toxicity,Kidney :Category 1 Liver,Spleen :Category 2 Lungs :Category 3 Respiratory system,Anesthetizing action
(Repeated exposure)	:Category 1 Liver, Kidney :Category 1 Central nervous system Lungs :Category 1 Peripheral nervous system :Category 2 Blood, Nervous system,Spleen
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 vapour
- May be harmful in contact with skin
- Causes skin irritation
- Causes eye irritation
- May cause genetic defects
- Suspected of causing cancer
- May damage fertility or the unborn child
- Causes damage to respiratory system, central nervous system, systemic toxicity, kidney, liver and spleen -single exposure
- May cause damage to lungs - single exposure
- May cause respiratory irritation, drowsiness or dizziness-single exposure
- Causes damage to liver, kidney, central nervous system, lungs and peripheral nervous system through prolonged or repeated exposure.
- May cause damage to blood, nervous system, spleen 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, CO₂, water spray (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.

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- 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
Ethanol	32-36	64-17-5
Cyclohexanone	15-19	108-94-1
Ethyl Acetate	15-19	141-78-6
Cellulose nitrate	7-9	9004-70-0
2-butanone	7-9	78-93-3
2-Propanol	7-9	67-63-0
Titanium oxide	5-7	13463-67-7

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

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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)	
Ethanol	:1000
Cyclohexanone	:25(skin)
Ethyl Acetate	:400
Cellulose nitrate	:None known
2-butanone	:200
2-Propanol	:200
Titanium oxide	:10mg/m3

ACGIH STEL(ppm)	
Ethanol	:No data
Cyclohexanone	:None known
Ethyl Acetate	:400
Cellulose nitrate	:None known
2-butanone	:300
2-Propanol	:4500
Titanium oxide	:None known

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:white

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Odor	:Solvent odor
Boiling point	: 78.3 (ethanol)
Flash point	:-9.0 (closed cup)
Upper/lower flammability or explosive limits	:Lower 4.3 vol%, Upper 19 vol%(ethanol)
Vapor pressure	: 5.9kPa(20)(ethanol)
Vapor density (Air = 1)	:1.59(ethanol)
Relative density	:0.93(20)
Solubility (Water)	:water,infinite(ethanol)
Partition coefficient: n-octanol/water	:-0.32(ethanol)
Auto-ignition temperature	:390 (ethanol)
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;

Ethanol

TDLo(oral,man): 700mg/kg(NTOTDY 8,77,1986)

LD50(oral,rat): 9000mg/kg(VCVGK* -, 93, 1984)

LC50(ihl,rat): 20000ppm/10H(NPIRI* 1,44,1974)

TCLo(ihl,human): 2500mg/m3/20M(VCVGK* -, 93,1984)

Cyclohexanone

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

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

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

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

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

Ethyl Acetate

LD50(oral,rat): 5620mg/kg(YKYUA6 32,, 1241, 1981)

LC50(ihl,mouse): 45gm/m3/2H(85GMAT -, 65, 1982)

Cellulose nitrate

>5000(Rat LD50(mg/kg))

2-butanone

LD50(oral,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(oral,human): 714.3mg/kg(VCVGK* -, 417, 1994)

2-Propanol

LD50(oral,rat): 5000mg/kg(VCVGK* -, 97, 1984)

LC50(ihl,rat): 72600mg/m3(VCVGK* -, 97, 1984)

LC50(ihl,mouse): 53000mg/m3(VCVGK* -, 97, 1984)

TDLo(oral,human): 286mg/kg(VCVGK* -, 97, 1984)

Titanium oxide

None known

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Skin corrosion/irritation;

Ethanol
Skin; rabbit; 20mg/24H; Moderate(85JCAE -, 189, 1986)
Cyclohexanone
Skin; rabbit; 500mg; Mild; Open(UCDS**)
Skin; human; 50%/48H; Mild(ADVEA4 27, 189, 1992)
Ethyl Acetate
No irritation: human(DFGOT vol.12,1999)
No irritation:rabbit(IUCLID 2000)
Cellulose nitrate
None known
2-butanone
Skin; rabbit; 402mg/24H; Mild(TXAPA9 19, 276, 1971)
2-Propanol
Skin; rabbit; 500mg; Mild(NTIS** AD-A106-944)
Titanium oxide
None known

Serious eye damage/irritation;

Ethanol
rabbit; 100mg/4S; Moderate(FCTOD7 20,573,1982)
Cyclohexanone
Eye; rabbit; 250?g/24H; Severe(85JCAE -,289,1986)
Ethyl Acetate
Eye; human; 400 ppm (JIHTAB 25,282,1943)
Cellulose nitrate
None known
2-butanone
Eye; rabbit; 80mg(TXAPA9 19, 276, 1971)
2-Propanol
Eye; rabbit; 100mg/24H; Moderate(85JCAE -,191,1986)
Titanium oxide
None known

Respiratory or skin sensitization;

Ethanol
Not available
Cyclohexanone
Skin; rabbit; 500mg; Mild; Open(UCDS**)
Skin; human; 50%/48H; Mild(ADVEA4 27, 189, 1992)
Ethyl Acetate
Not available
Cellulose nitrate
None known
2-butanone
Not available
2-Propanol
Not available
Titanium oxide
None known

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Germ cell mutagenicity;

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)

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)

Ethyl Acetate

Cytogenetic analysis; hamster; fibroblast; 9 gm/L(FCTOD7 22,623,1984)
 Sex chromosome loss and nondisjunction; *S.cerevisiae*; 24400ppm(MUREAV 149, 339, 1985)

Cellulose nitrate

None known

2-butanone

Reverse mutation assay in *S.typhimurium* and *E.coli*; Negative
 Sex chromosome loss and nondisjunction; *S.cerevisiae*; 33800ppm(MUREAV 149, 339, 1985)

2-Propanol

TDLo(oral,rat): 8gm/kg(female 6-15 D preg)(RTOPDW 23,183,1996)
 TCLo(oral,rat): 3500ppm/7H(female 1-19 D preg)(FCTOD7 26,247,1988)

Titanium oxide

None known

Carcinogenicity;

Ethanol

TDLo(oral,mouse): 320mg/kg/50W-I(CALEDQ 13,345,1981)

Cyclohexanone

Not available

Ethyl Acetate

Not available

Cellulose nitrate

None known

2-butanone

Not available

2-Propanol

Not available

2-butanone

Not available

2-Propanol

Not available

Titanium oxide

None known

Reproductive toxicity;

Ethanol

TDLo(oral,woman): 250mg/kg(37 W preg); Effects on Embryo or Fetus - other effects to embryo(AJOGAH 145,251,1983)
 TDLo(oral,rat): 22.5gm/kg(female 11-20 D preg); Specific Developmental Abnormalities - Central Nervous Systems(NETEEC 24, 719, 2002)

Cyclohexanone

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

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TDLo(ori,mouse): 11mg/kg(8-12 D preg); Effects on Newborn - growth statistics(TCMUD8 6,361,1986)
 Ethyl Acetate
 Not available
 Cellulose nitrate
 None known
 2-butanone
 TCLo(ihl,rat): 2900mg/m3(female 6-10 D preg); Specific Developmental Abnormalities - craniofacial(VCVGK* -, 418, 1994)
 2-Propanol
 TDLo(ori,rat): 8gm/kg(female 6-15 D preg)(RTOPDW 23,183,1996)
 TCLo(ihl,rat): 3500ppm/7H(female 1-19 D preg)(FCTOD7 26,247,1988)
 Titanium oxide
 None known

STOST-single exposure;

Ethanol
 Human ihl, 5000ppm(9,4mg/L), respiratory tract irritation and confusion(ACGIH 2001)
 Cyclohexanone
 None known
 Ethyl Acetate
 The above part respiratory organ stimulation by 400ppm, human(ACGIH, 2001; DFGOT, vol 12,1999)
 Anesthesia and lung damage by the lethal concentration(DFGOT, vol 12,1999)
 Cellulose nitrate
 None known
 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)
 2-Propanol
 Not available
 Titanium oxide
 None known

STOST-repeated exposure;

Ethanol
 Not available
 Cyclohexanone
 None known
 Ethyl Acetate
 Not available
 Cellulose nitrate
 None known
 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)
 2-Propanol
 Not available
 Titanium oxide

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None known

Aspiration hazard.

Ethanol
Not available
Cyclohexanone
None known
Ethyl Acetate
Not available
Cellulose nitrate
None known
2-butanone
Not available
2-Propanol
Not available
Titanium oxide
None known

12 Ecological information

Toxicity:

Ethanol
TDLo(ori,man): 700mg/kg(NTOTDY 8,77,1986)
LD50(ori,rat): 9000mg/kg(VCVGK* -, 93, 1984)
LC50(ihl,rat): 20000ppm/10H(NPIRI* 1,44,1974)
TCLo(ihl,human): 2500mg/m3/20M(VCVGK* -, 93,1984)
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)
Ethyl Acetate
LD50(ori,rat): 5620mg/kg(YKYUA6 32,, 1241, 1981)
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Cellulose nitrate
>5000(Rat LD50(mg/kg))
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)
2-Propanol
LD50(ori,rat): 5000mg/kg(VCVGK* -, 97, 1984)
LC50(ihl,rat): 72600mg/m3(VCVGK* -, 97, 1984)
LC50(ihl,mouse): 53000mg/m3(VCVGK* -, 97, 1984)
TDLo(ori,human): 286mg/kg(VCVGK* -, 97, 1984)
Titanium oxide

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None known

Persistence and degradability:

Ethanol

This material is biodegradable.

Cyclohexanone

This material is biodegradable.

Ethyl Acetate

This material is biodegradable.

Cellulose nitrate

None known

2-butanone

Not available

2-Propanol

This material is biodegradable.

Titanium oxide

None known

Bioaccumulative potential:

Ethanol

Not available

Cyclohexanone

:Not available

Ethyl Acetate

Not available

Cellulose nitrate

None known

2-butanone

Not available

2-Propanol

Not available

Titanium oxide

None known

Mobility in soil:

Ethanol

Not available

Cyclohexanone

None known

Ethyl Acetate

Not available

Cellulose nitrate

None known

2-butanone

Not available

2-Propanol

Not available

Titanium oxide

None known

13 Disposal considerations

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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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