

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.

GHS label elements

Hazard symbols:

**Signal word:** Danger**Hazard statement and precautionary statement:**

- Highly flammable liquid and vapour
- May be harmful if swallowed
- May be harmful if inhaled
- Causes skin irritation
- Causes damage to central nervous system-single exposure
- May cause damage to kidney-single exposure
- May cause damage to airway irritant
- Causes damage to liver, central nervous system, organum auditus, lungs and peripheral nervous system through prolonged or repeated exposure
- May cause damage to 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

- Store in cool/well-ventilated place. Store locked up.

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- 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	40-50	78-93-3
Titanium oxide	10-20	13463-67-7
Ethanol	1-10	64-17-5
1-butanol	1-3	71-36-3
Chrome -Complex Dye	1-5	TSCA Registered
2-butanol	<1	78-92-2
Methanol	<1	67-56-1

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.

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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
Titanium oxide	:10mg/m3
Ethanol	:1000
1-butanol	:20(skin)
Chrome -Complex Dye	:None known
2-butanol	:100
Methanol	:200(skin)

ACGIH STEL(ppm)

2-butanone	:300
Titanium oxide	:None known
Ethanol	:No data
1-butanol	:None known
Chrome -Complex Dye	:None known
2-butanol	:None known
Methanol	:250(skin)

9 Physical and chemical properties

Appearance	
Physical state	:Liquid
Color	:Yellow
Odor	:Solvent odor
Boiling point	:80 (2-butanone)
Flash point	:-8.1 (closed cup)
Upper/lower flammability or explosive limits	:Lower 1.8 vol%, Upper 11.5 vol% (2-butanone)
Vapor pressure	:10.5kPa (20) (2-butanone)

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Vapor density (Air = 1)	:2.41 (2-butanone)
Relative density	:0.95(20)
Solubility (Water)	:29g/100mL (20)(2-butanone)
Partition coefficient: n-octanol/water	:0.29 (2-butanone)
Auto-ignition temperature	:505 (2-butanone)
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;

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)

Titanium oxide

None known

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)

1-butanol

TCLo(ihl,human): 25ppm(JIHTAB 25,282,1943)

LD50(oral,rat): 790mg/kg(SAMJAF 43,795,1969)

LC50(ihl,rat): 8000ppm/4H(NPIRI* 1,10,1974)

LD50(skin,rabbit): 3400mg/kg(NPIRI* 1,10,1974)

LD50(oral,rat): 1227mg/kg(Calculate)

LD50(skin,rabbit): 3636mg/kg(Calculate)

L

Chrome -Complex Dye

Oral >5000 (Rat LD50 (mg/kg))

Dermal >2000 (Rat LD50 (mg/kg))

Inhalation None known

2-butanol

None known

Methanol

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

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

TDLo(oral,man): 9450μL/kg(AJEMEN 16,538,1998)

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

Skin corrosion/irritation;

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2-butanone
Skin; rabbit; 402mg/24H; Mild(TXAPA9 19, 276, 1971)
Titanium oxide
None known
Ethanol
Skin; rabbit; 20mg/24H; Moderate(85JCAE -, 189, 1986)
1-butanol
Skin; rabbit; 20mg/24H; Moderate(85JCAE -,193,1986)
Chrome -Complex Dye
No (Rabbit test-OECD404 1981)
2-butanol
None known
Methanol
Skin; rabbit; 20mg/24H; Moderate(85JCAE -,187,1986)

Serious eye damage/irritation;

2-butanone
Eye; rabbit; 80mg(TXAPA9 19, 276, 1971)
Titanium oxide
None known
Ethanol
rabbit; 100mg/4S; Moderate(FCTOD7 20,573,1982)
1-butanol
Eye; rabbit; 2mg/24H; Severe(85JCAE -,193,1986)
Chrome -Complex Dye
No (Rabbit test-84/449/EEC B.5)
2-butanol
None known
Methanol
Eye; rabbit; 100mg/24H; Moderate(85JCAE -,187,1986)

Respiratory or skin sensitization;

2-butanone

Titanium oxide
None known
Ethanol
Not available
1-butanol
Not available
Chrome -Complex Dye
No (Guinea pig test-84/449/EC B.6)
2-butanol
None known
Methanol
Allergic dermatitis; human, skin(PATTY 4th,1994)
No skin sensitization ;Magnusson-Kligman maximization test, guinea pig(EHC 196,1997: DFGOT vol. 16,2001)

Germ cell mutagenicity;

2-butanone

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Reverse mutation assay in *S.typhimuriun* and *E.coli*; Negative
 Sex chromosome loss and nondisjunction; *S.cerevisiae*; 33800ppm(MUREAV 149, 339, 1985)
 Titanium oxide
 None known
 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)
 1-butanol
 Sex chromosome loss and nondisjunction; hamster; lung; 100mmol/L(MUREAV 182,135,1987)
 Chrome -Complex Dye
 None known
 2-butanol
 None known
 Methanol
 Mutation in microorganisms; mouse; lymphocyte; 7900mg/L(ENMUDM 7(Suppl 3),10,1985)

Carcinogenicity;

2-butanone
 Not available
 Titanium oxide
 None known
 Ethanol
 TDLo(ori,mouse): 320mg/kg/50W-I(CALEDQ 13,345,1981)
 1-butanol
 Not available
 Chrome -Complex Dye
 None known
 2-butanol
 None known
 Methanol
 Not available

Reproductive toxicity;

2-butanone
 TCLo(ihl,rat): 2900mg/m3(female 6-10 D preg); Specific Developmental Abnormalities -
 craniofacial(VCVGK* -, 418, 1994)
 Titanium oxide
 None known
 Ethanol
 TDLo(ori,woman): 250mg/kg(37 W preg); Effects on Embryo or Fetus - other effects to
 embryo(AJOGAH 145,251,1983)
 TDLo(ori,rat): 22.5gm/kg(female 11-20 D preg); Specific Dvelopmental Abnormalities - Central
 Nervous Systems(NETEEC 24, 719, 2002)
 1-butanol
 TDLo(ori,rat): 35295mg/kg(1-15 D preg)(ONGZAC 22(1),71,1991)
 TCLo(ihl,rat): 6000ppm/7H(1-19 D preg)(FAATDF 12,469,1989)
 Chrome -Complex Dye
 None known
 2-butanol
 None known

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Methanol

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

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

STOST-single exposure;**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)

Titanium oxide

None known

Ethanol

Human ihl, 5000ppm(9,4mg/L), respiratory tract irritation and confusion(ACGIH 2001)

1-butanol

Human; ihl, Mild in throat(DFGOT vol 19, 2003)

Animal; anesthesia, bridge of central nervous system(SIDS, 2004, EHC 65, 1987, ACGIH, 2002, DFGOT vol 19, 2003, PATTY 4th, 1994)

Chrome -Complex Dye

None known

2-butanol

None known

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 , mous

STOST-repeated exposure;**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)

Titanium oxide

None known

Ethanol

Not available

1-butanol

Human; exposure, giddiness and headache(EHC 65, 1987, ACGIH, 2002, DFGOT vol 19, 2003, PATTY 4th, 1994)

Human; exposure, audiometric hearing loss(EHC 65, 1987, ACGIH, 2002, DFGOT vol 19, 2003, PATTY 4th, 1994)

Chrome -Complex Dye

None known

2-butanol

None known

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 , mous

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Aspiration hazard.

2-butanone
Not available
Titanium oxide
None known
Ethanol
Not available
1-butanol
Not available
Chrome -Complex Dye
None known
2-butanol
None known
Methanol
Not available

12 Ecological information**Toxicity:**

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)
Titanium oxide
None known
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)
1-butanol
TCLo(ihl,human): 25ppm(JIHTAB 25,282,1943)
LD50(ori,rat): 790mg/kg(SAMJAF 43,795,1969)
LC50(ihl,rat): 8000ppm/4H(NPIRI* 1,10,1974)
LD50(skin,rabbit): 3400mg/kg(NPIRI* 1,10,1974)
LD50(ori,rat): 1227mg/kg(Calculate)
LD50(skin,rabbit): 3636mg/kg(Calculate)
L
Chrome -Complex Dye
Oral >5000 (Rat LD50 (mg/kg))
Dermal >2000 (Rat LD50 (mg/kg))
Inhalation None known
2-butanol
None known
Methanol

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

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

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

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

Persistence and degradability:

2-butanone

Not available

Titanium oxide

None known

Ethanol

This material is biodegradable.

1-butanol

This material is biodegradable.

Chrome -Complex Dye

None known

2-butanol

None known

Methanol

This material is biodegradable.

Bioaccumulative potential:

2-butanone

Not available

Titanium oxide

None known

Ethanol

Not available

1-butanol

Not available

Chrome -Complex Dye

None known

2-butanol

None known

Methanol

Not available

Mobility in soil:

2-butanone

Not available

Titanium oxide

None known

Ethanol

Not available

1-butanol

Not available

Chrome -Complex Dye

None known

2-butanol

None known

Methanol

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Not available

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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