MATERIAL SAFETY DATA SHEET

InkSource
Ink
16-2500

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product name : 16-2500

Material uses : Industrial applications: Ink for use in a continuous ink jet process.

Emergency phone : Medical: CALL RMPDC, USA (303) 623-5716
Transporters: CALL CHEMTREC, USA (800)-424-9300

Manufacturer : Videojet Technologies Inc., 1500 Mittel Boulevard, Wood Dale, IL, 60191-1073 U.S.A
Phone: 1-800-843-3610 Fax: 1-800-582-1343
Videojet Technologies Europe BV., Strijkviertel 39, 3454 PJ De Meern, The Netherlands.
Phone: 31-030-6693000 Fax: 31-030-6693060

2. COMPOSITION / INFORMATION ON INGREDIENTS

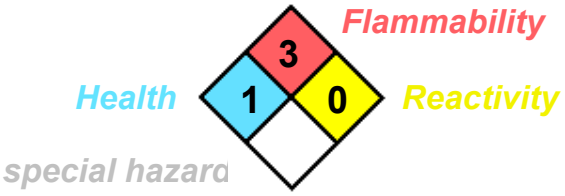
Information on hazardous ingredients

	CAS No.	Percent (%)	Chemical name
1)	872-50-4	1 - 3	2-PYRROLIDINONE, 1-METHYL-
2)	78-93-3	20 - 35	2-Butanone
3)	67-56-1	20 - 35	Methanol
4)	107-98-2	3 - 7	Propylene glycol monomethyl ether
5)		1 - 3	Organosilane Compound
6)	13463-67-7	7 - 13	Titanium dioxide

* Occupational Exposure Limit(s), if available, are listed in section 8

3. HAZARDS IDENTIFICATION

National Fire Protection Association (U.S.A.) :



Emergency Overview : WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL. Keep away from flame, heat, and static discharge sources. Irritant and central nervous system depressant: Avoid inhalation of vapors and contact with eyes and skin. May be fatal or cause blindness if swallowed. If inhaled remove to fresh air. If splashed in eyes flush with water. If contacts skin flush with water and wash with mild soap. In medical emergency call Poison Control Center (USA 303-623-5716) and a physician. Read MSDS before using.

Effects and symptoms

	Chemical name	Effects and symptoms
1)	2-PYRROLIDINONE, 1-METHYL-	Inhalation not likely under normal use conditions. Slightly irritating to the skin. Absorbed through skin. Severely irritating to eyes. Eye exposure may cause severe and permanent eye injury (blindness). Ingestion may cause nausea/vomiting and diarrhea . Prolonged skin contact may cause dermatitis with drying and cracking of skin.
2)	2-Butanone	Irritating to eyes and respiratory system. Defatting to the skin. Harmful by inhalation, in contact with skin and if swallowed. Can cause dizziness, lighheadedness, headache, nausea, and blurred vision. Can cause CNS depression.
3)	Methanol	May cause irritation of respiratory tract, coughing, shortness of breath. Irritating to eyes and skin. Absorbed through skin. May be fatal or cause blindness if swallowed. Can cause dizziness, lighheadedness, headache, nausea, and blurred vision. Can cause CNS depression. May cause damage to the following organs: Optic Nerve. Danger of cumulative effects.
4)	Propylene glycol monomethyl ether	May cause irritation of respiratory tract, coughing, shortness of breath. Irritating to skin. Absorbed through skin. Irritating to eyes. May cause Irritation, redness, lacrimation, pain. Ingestion : Exposure can cause stomach pains, vomiting and diarrhea. Inhalation and Ingestion : Can

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	cause CNS depression. Can cause dizziness, lighheadedness, headache, nausea, and blurred vision. May cause loss of consciousness/coma .
5) Organosilane Compound	Slightly irritating to the skin. Slightly irritating to the eyes.
6) Titanium dioxide	Dust may cause mechanical irritation. Inhalation not likely under normal use conditions. Slightly irritating to the skin. Slightly irritating to the eyes.

4. FIRST AID MEASURES

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion : If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

5. FIRE-FIGHTING MEASURES

Extinguishing media : Flammable liquid, insoluble in water.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special fire-fighting procedures : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Hazardous thermal decomposition products : These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...). Some metallic oxides.

Protection of fire-fighters : Be sure to use an approved/certified respirator or equivalent.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Environmental precautions and: clean-up methods : Toxic flammable liquid, insoluble or very slightly soluble in water. Toxic liquid.
Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

7. HANDLING AND STORAGE

Handling : Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Packaging materials : Use original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Hygiene measures : Wash hands, forearms, and face thoroughly after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Occupational Exposure Limits

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	Chemical name	Exposure limits
1)	2-PYRROLIDINONE, 1-METHYL-	1) United States AIHA TWA 8 hours 10 ppm
2)	2-Butanone	1) United States ACGIH TWA 8 hours 200 ppm 2) United States ACGIH STEL 15 minutes 300 ppm 3) United States OSHA TWA 8 hours 200 ppm
3)	Methanol	1) United States ACGIH STEL 15 minutes 250 ppm (Skin) 2) United States ACGIH TWA 8 hours 200 ppm (Skin) 3) United States OSHA TWA 8 hours 200 ppm
4)	Propylene glycol monomethyl ether	1) United States ACGIH TWA 8 hours 100 ppm 2) United States ACGIH STEL 15 minutes 150 ppm 3) United States MSHA TWA 8 hours 100 ppm
5)	Organosilane Compound	No established limits.
6)	Titanium dioxide	1) United States ACGIH TWA 8 hours 10 mg/m ^{3} 2) United States OSHA TWA 8 hours 5 mg/m ^{3} 3) United States OSHA TWA 8 hours 15 mg/m ^{3}

Personal Protective Equipment

Respiratory system : Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Skin and body : Lab coat.

Hands : Gloves.

Eyes : Splash goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance : Liquid.

Color : Yellow.

Odor threshold : The highest known value is 100 ppm. Weighted average: 40 ppm.

Boiling point : The lowest known value is 64 °C. Weighted average: 94 °C.

Melting point : May start to solidify at 0 °C. Weighted average: -85 °C.

Specific gravity : 0.98 (Water = 1)

Vapor density : The highest known value is 3.4. The lowest known value is 0.6. (Air = 1)

Vapor pressure : The highest known value is 100 mmHg at 20°C. Weighted average: 65 mmHg at 20°C.

Evaporation rate (butyl acetate = 1) : The highest known value is 7.1. Weighted average: 4.2.

Solubility : Easily soluble in methanol, diethyl ether, n-octanol, acetone.
Insoluble in cold water, hot water.

Octanol/water partition coefficient : The product is much more soluble in oil.

pH : Neutral.

Flash point : -2 °C.

Autoignition temperature : The lowest known value is 270 °C. Weighted average: 463 °C.

Flammable limits : The lowest known value is 1.0%. The highest known value is 36.0%.

Volatility (w/w) : 66 %.

VOC Volatility (w/w) - less exempt volatile. : 63 %.

10. STABILITY AND REACTIVITY

Stability : The product is stable.

Conditions and materials to avoid : Not available.

Hazardous reactions : Reactive with oxidizing agents.
Slightly reactive to reactive with reducing agents, metals, acids, alkalis, moisture.

Hazardous decomposition products : These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...). Some metallic oxides.

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11. TOXICOLOGICAL INFORMATION

	Chemical name	Toxicological Information
1)	2-PYRROLIDINONE, 1-METHYL-	1) LD50 Oral Rat: 3914 mg/kg 2) LD50 Oral Mouse: 5130 mg/kg 3) LD50 Dermal Rabbit: 8000 mg/kg
2)	2-Butanone	1) LD50 Oral Rat: 2737 mg/kg 2) LD50 Oral Mouse: 2190 mg/kg 3) LD50 Oral Mouse: 4050 mg/kg 4) LD50 Dermal Rabbit: 6480 mg/kg 5) LC50 Inhalation vapor Rat: 23500 mg/m ^{3} 8 hours 6) LCLo Inhalation vapor Female. Rat Fetotoxicity and developmental abnormalities (homeostasis) in rats.: 1000 ppm 1 hours
3)	Methanol	1) LD50 Oral Rat: 5628 mg/kg 2) LD50 Oral Rabbit: 14200 mg/kg 3) LD50 Oral Mouse: 7300 mg/kg 4) LD50 Dermal Rabbit: 15800 mg/kg 5) LDLo Oral monkey: 393 mg/kg 6) LDLo Dermal monkey: 393 mg/kg
4)	Propylene glycol monomethyl ether	1) LD50 Oral Rabbit: 5700 mg/kg 2) LD50 Oral Mouse: 11700 mg/kg 3) LD50 Oral Dog: 5000 mg/kg 4) LD50 Dermal Rabbit: 13000 mg/kg 5) LC50 Inhalation vapor Rat: 10000 ppm 10 hours 6) LCLo Inhalation vapor Guinea pig: 15000 ppm 7 hours
5)	Organosilane Compound	1) LD50 Oral Rat: 23000 mg/kg 2) LD50 Dermal Rabbit: 3970 mg/kg 3) LCLo Inhalation vapor Rat: 5300 mg/m ^{3} 4 hours
6)	Titanium dioxide	Not available.

12. ECOLOGICAL INFORMATION

Persistence/degradability : Not available.

Ecotoxicity : Not available.

Heavy Metals : Total concentration: Pb, Hg, Cd, Cr(VI) < 100 ppm

California, VOC Content : 638 grams volatile organic / liter less water or exempt volatile.

13. DISPOSAL CONSIDERATIONS

Disposal methods : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

RCRA waste code : Not available.

14. TRANSPORT INFORMATION

UN number : UN1210

Proper shipping name : Printing Ink

TDG classification : 3

Packing group : II

15. REGULATORY INFORMATION

CERCLA : The following product(s) is (are) listed by CERCLA: 2-Butanone (20 - 35%) ; Methanol (20 - 35%)

SARA 313 : The following product(s) is (are) listed on SARA 313: 2-PYRROLIDINONE, 1-METHYL- (1 - 3%) ; 2-Butanone (20 - 35%) ; Methanol (20 - 35%)

California prop. 65 : This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: 2-PYRROLIDINONE, 1-METHYL- (1 - 3%) ; Toluene (<= 0.0001%)

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16. OTHER INFORMATION

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Prepared by : Garth Studebaker, CSP

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Notice to Reader

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