Safety Data Sheet

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Document group:	32-1639-7	**Version number:**	5.00
Issue Date:	2025/07/17	**Supercedes Date:**	2020/10/22

This Safety Data Sheet has been prepared in accordance with the Canadian Hazardous Products Regulations.

SECTION 1: Identification

1.1. Product identifier
3M™ Piezo Inkjet Ink 1582v2 Light Yellow

Product Identification Numbers
75-3472-5465-0

1.2. Recommended use and restrictions on use

Intended Use
Ink

Specific Use
Screen printing ink

Restrictions on use
Not applicable

1.3. Supplier's details

Company:	3M Canada Company
Division:	Commercial Branding and Transportation Division
Address:	1840 Oxford Street East, Post Office Box 5757, London, Ontario N6A 4T1
Telephone:	(800) 364-3577
Website:	www.3M.ca

1.4. Emergency telephone number
Medical Emergency Telephone:1-800-3M HELPS / 1800 364 3577

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture
Flammable Liquid: Category 4.
Acute Toxicity (oral): Category 4.
Skin Corrosion/Irritation: Category 2.
Serious Eye Damage/Irritation: Category 1.
Reproductive Toxicity: Category 2.

2.2. Label elements
Signal word
Danger

Symbols
Corrosion |Exclamation mark |Health Hazard |

Pictograms



Hazard Statements
Combustible Liquid
Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Suspected of damaging fertility or the unborn child.

Precautionary statements

Prevention:
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wash exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves, eye protection, and face protection.

Response:
IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. Rinse mouth. If skin irritation occurs: Get medical advice. Take off contaminated clothing and wash it before reuse. In case of fire: Use a fire fighting agent suitable for flammable liquids such as dry chemical or carbon dioxide to extinguish.

Storage:
Store in a well-ventilated place. Store locked up.

Disposal:
Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

2.3. Other hazards
None known.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt	Common Name
2-BUTOXYETHYL ACETATE	112-07-2	80 - 90 Trade Secret *	Ethanol, 2-butoxy-, acetate
CYCLOHEXANONE	108-94-1	6 - 14	Cyclohexanone
PIGMENT	Trade Secret	1 - 10	Not Applicable
Tricresyl Phosphate	1330-78-5	0.1 - 1.5 Trade Secret *	Phosphoric acid, tris(methylphenyl) ester

Pigment is a non-hazardous material according to WHMIS criteria. Specific information has been withheld as a trade secret.

*The concentration (exact or range) of this component has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Immediately get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Serious damage to the eyes (corneal cloudiness, severe pain, tearing, ulcerations, and significantly impaired or loss of vision).

4.3. Indication of any immediate medical attention and special treatment required
Not applicable.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for flammable liquids such as dry chemical or carbon dioxide to extinguish.

5.2. Unsuitable extinguishing media
None Determined

5.3. Special hazards arising from the substance or mixture
Closed containers exposed to heat from fire may build pressure and explode.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion

5.4. Special protection actions for fire-fighters
Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use personal protective equipment based on the results of an exposure assessment. Refer to Section 8 for PPE recommendations. If anticipated exposure resulting from an accidental release exceeds the protective capabilities of the PPE listed in Section 8, or are unknown, select PPE that offers an appropriate level of protection. Consider the physical and chemical hazards of the material when doing so. Examples of PPE ensembles for emergency response could include wearing bunker gear for a release of flammable material; wearing chemical protective clothing if the spilled material is a corrosive, a sensitizer, a significant dermal irritant, or can be absorbed through the skin; or donning a positive pressure supplied-air respirator for chemicals with inhalation hazards. For information regarding physical and health hazards, refer to sections 2 and 11 of the SDS. Evacuate area. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-

sparking tools. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapours, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapours in the spill area to burn or explode.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Contain spill. Cover spill area with a fire extinguishing foam that is resistant to polar solvents. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible using non-sparking tools. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with detergent and water. Seal the container. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
For industrial or professional use only. Not for consumer sale or use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
Store in a well-ventilated place. Keep cool. Store away from heat. Store away from acids. Store away from strong bases. Store away from oxidizing agents. Store locked up.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
CYCLOHEXANONE	108-94-1	ACGIH	TWA:20 ppm;STEL:50 ppm	Danger of cutaneous absorption
2-BUTOXYETHYL ACETATE	112-07-2	ACGIH	TWA:20 ppm	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
No engineering controls required.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Full Face Shield
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.
Gloves made from the following material(s) are recommended: Polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapors
Half facepiece or full facepiece supplied-air respirator

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Specific Physical Form:	Liquid
Colour	Yellow
Odour	Slight Solvent
Odour threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*Not Applicable*
Boiling point	> 193.3 ºC
Flash Point	61.1 ºC [*Test Method:*Closed Cup]
Evaporation rate	*No Data Available*
Flammability	Flammable Liquid: Category 4.
Flammable Limits(LEL)	0.88 %
Flammable Limits(UEL)	12.75 %
Vapour Pressure	*No Data Available*
Relative Vapour Density	*No Data Available*
Density	0.968 g/ml
Relative density	0.968 [*Ref Std:*WATER=1]
Water solubility	Moderate
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	> 315.6 ºC
Decomposition temperature	*No Data Available*
Kinematic Viscosity	*No Data Available*
Volatile Organic Compounds	900 g/l
Percent volatile	85 - 95 %

VOC Less H2O & Exempt Solvents	900 g/l

Particle Characteristics	*Not Applicable*

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Sparks and/or flames
Heat

10.5. Incompatible materials
Strong oxidizing agents
Strong acids
Strong bases
Reducing agents

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
May be harmful if inhaled. May cause additional health effects (see below).

Skin Contact:
May be harmful in contact with skin. Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain. May cause additional health effects (see below).

Eye Contact:
Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion:
Harmful if swallowed. Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. May cause additional health effects (see below).

Additional Health Effects:

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE >2,000 - =5,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE >20 - =50 mg/l
Overall product	Ingestion		No data available; calculated ATE >300 - =2,000 mg/kg
2-BUTOXYETHYL ACETATE	Dermal	Rabbit	LD50 > 4,766 mg/kg
2-BUTOXYETHYL ACETATE	Inhalation-Vapor (4 hours)	Rat	LC50 > 2.66 mg/l
2-BUTOXYETHYL ACETATE	Ingestion	Rat	LD50 1,880 mg/kg
CYCLOHEXANONE	Dermal	Rabbit	LD50 >794, <3160 mg/kg
CYCLOHEXANONE	Inhalation-Vapor (4 hours)	Rat	LC50 > 6.2 mg/l
CYCLOHEXANONE	Ingestion	Rat	LD50 1,296 mg/kg
PIGMENT	Ingestion	Rat	LD50 > 2,000 mg/kg
PIGMENT	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 > 1.7 mg/l
PIGMENT	Dermal	similar health hazards	LD50 estimated to be > 5,000 mg/kg
Tricresyl Phosphate	Dermal	Rabbit	LD50 3,700 mg/kg
Tricresyl Phosphate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.2 mg/l
Tricresyl Phosphate	Ingestion	Rat	LD50 15,750 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
2-BUTOXYETHYL ACETATE	Rabbit	Minimal irritation
CYCLOHEXANONE	Rabbit	Irritant
PIGMENT	Rabbit	Minimal irritation
Tricresyl Phosphate	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
2-BUTOXYETHYL ACETATE	Rabbit	Mild irritant
CYCLOHEXANONE	In vitro data	Corrosive
PIGMENT	Rabbit	No significant irritation
Tricresyl Phosphate	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
2-BUTOXYETHYL ACETATE	Guinea pig	Not classified
CYCLOHEXANONE	Guinea pig	Not classified
PIGMENT	Guinea pig	Not classified
Tricresyl Phosphate	Professional judgement	Not classified

Respiratory Sensitization

For the component/components, either no data are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Name	Route	Value
CYCLOHEXANONE	In Vitro	Not mutagenic
CYCLOHEXANONE	In vivo	Not mutagenic
PIGMENT	In Vitro	Not mutagenic
Tricresyl Phosphate	In Vitro	Not mutagenic
Tricresyl Phosphate	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
CYCLOHEXANONE	Ingestion	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
Tricresyl Phosphate	Ingestion	Multiple animal species	Not carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
CYCLOHEXANONE	Inhalation	Not classified for female reproduction	Rat	NOAEL 4 mg/l	2 generation
CYCLOHEXANONE	Ingestion	Not classified for development	Rabbit	NOAEL 500 mg/kg/day	during gestation
CYCLOHEXANONE	Inhalation	Not classified for male reproduction	Rat	NOAEL 2 mg/l	2 generation
CYCLOHEXANONE	Inhalation	Not classified for development	Rat	NOAEL 2.6 mg/l	during gestation
PIGMENT	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating into lactation
PIGMENT	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	41 days
PIGMENT	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	during gestation
Tricresyl Phosphate	Ingestion	Not classified for development	Rat	NOAEL 400 mg/kg/day	during gestation
Tricresyl Phosphate	Ingestion	Toxic to female reproduction	Multiple animal species	NOAEL Not available	premating into lactation
Tricresyl Phosphate	Ingestion	Toxic to male reproduction	Multiple animal species	NOAEL Not available	premating into lactation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
2-BUTOXYETHYL ACETATE	Dermal	blood	Not classified	similar compounds	NOAEL Not available	
2-BUTOXYETHYL ACETATE	Inhalation	central nervous system depression	Some positive data exist, but the data are not sufficient for classification	similar compounds	NOAEL Not available	
2-BUTOXYETHYL ACETATE	Inhalation	blood	Not classified	similar compounds	NOAEL Not available	
2-BUTOXYETHYL ACETATE	Ingestion	blood	Not classified	similar compounds	NOAEL Not available	
CYCLOHEXANONE	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Guinea pig	LOAEL 16.1 mg/l	6 hours
CYCLOHEXANONE	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	
CYCLOHEXANONE	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Professional judgement	NOAEL Not available	
Tricresyl Phosphate	Ingestion	peripheral nervous system	Not classified	Chicken	NOAEL 2,000 mg/kg	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
2-BUTOXYETHYL ACETATE	Dermal	blood	Not classified	similar compounds	NOAEL Not available	not available
2-BUTOXYETHYL ACETATE	Inhalation	blood	Not classified	similar compounds	NOAEL Not available	6 months
2-BUTOXYETHYL ACETATE	Ingestion	blood	Not classified	similar compounds	NOAEL Not available	13 weeks
CYCLOHEXANONE	Inhalation	liver | kidney and/or bladder | heart | skin | endocrine system | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | immune system | muscles | nervous system | eyes | respiratory system | vascular system	Not classified	Rat	NOAEL 2.5 mg/l	13 weeks
CYCLOHEXANONE	Ingestion	hematopoietic system | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 407 mg/kg/day	3 months
PIGMENT	Ingestion	heart | endocrine system | gastrointestinal tract | hematopoietic system | liver | immune system | nervous system | kidney and/or bladder | respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	41 days

Tricresyl Phosphate	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 230 mg/kg/day	13 weeks
Tricresyl Phosphate	Ingestion	endocrine system | liver | heart | skin | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | immune system | nervous system | respiratory system	Not classified	Rat	NOAEL 750 mg/kg/day	13 weeks

Aspiration Hazard
For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

No data available.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

As a disposal alternative, utilize an acceptable permitted waste disposal facility. Incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Global inventory status

Contact 3M for more information. The components of this material are in compliance with the provisions of the Korea Chemical Control Act. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. This product complies with Measures on Environmental Management of New Chemical

Substances. All ingredients are listed on or exempt from on China IECSC inventory. The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

SECTION 16: Other information

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.
Health: 3 **Flammability:** 2 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

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3M Canada SDSs are available at www.3M.ca