

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	LC51BK	LC51HY-BK	LC1000BK	LC1000HY-BK
Product Code	LK2083001	LK2198001	LK2328001	LK2329001
Product Name	LC57BK	LC57HY-BK	LC960BK	LC960HY-BK
Product Code	LK2361001	LK2367001	LK2459001	LK2466001
Product Name	LC37BK	LC970BK		
Product Code	LK3104001	LK2649001		
General Use	Inkjet printing			
Product Description	Water based ink cartridge for inkjet printing machine			
MSDS No.	BHK014			
Manufacturer	BROTHER INDUSTRIES, LTD. 5-1, Hamada-cho, Minami-ku, Nagoya 457-0822, JAPAN Telephone Number for Information +81-52-824-3445			
Importer in USA	BROTHER INTERNATIONAL CORPORATION 100 Somerset Corporate Boulevard, P.O.Box 6911, Bridgewater, NJ 08807-0911, USA Telephone Number for Information +1-800-284-4329			
Importer in Canada	BROTHER INTERNATIONAL CORP. (Canada) LTD. 1 rue Hôtel de Ville, Dollard-des-Ormeaux, Québec, H9B 3H6, CANADA Telephone Number for Information +1-514-685-0600			
Importer in Australia	BROTHER INTERNATIONAL (AUST.) PTY. LTD. ACN 001 393 835 7 Khartoum Road, North Ryde, N.S.W. 2113 08875-6714, AUSTRALIA Telephone Number for Information +61-2-9887-4344			
Importer in Europe	BROTHER INTERNATIONAL EUROPE LTD. Brother house, 1 Tame Street, Guide Bridge, Audenshaw, Manchester M34 5JE, UK Telephone Number for Information +44-161-330-6531			

Please telephone to the above office during our business hours.

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Ink in cartridge is black liquid with slight odor.

Keep out of reach of children.

Ink poses little or no immediate hazard if spilled.

POTENTIAL HEALTH EFFECTS

Inhalation : Not expected to be a route of exposure under normal use.

Eye : Ink may cause slight irritation.

Skin : Prolonged exposure to ink may cause irritation.

Ingestion : Ink may cause gastrointestinal or other adverse effects.

MATERIAL SAFETY DATA SHEET

CHRONIC EFFECTS / CARCINOGENICITY

Specific data are not available. Carbon black has been classified by the IARC as group 2B. Other ingredients of ink have not been classified as carcinogens according to IARC monographs, NTP, and OSHA regulated.

EU HAZARD LABEL

Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC.

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS# / EC#	% by weight	USA OSHA PEL	ACGIH TLV	EU Symbol / Risk Phrases
Carbon black	1333-86-4 / 215-609-9	1 - 5	Limits for air contaminant TWA3.5mg/m ³	TWA3.5mg/m ³ Not classifiable as a human carcinogen.	Not classified
Glycerol	56-81-5 / 200-289-5	10 - 30	(as mist) Total dust TWA 15mg/m ³ Respirable fraction TWA 5mg/m ³	(as mist) Total dust TWA 10mg/m ³	Not classified
Water	7732-18-5 / 231-791-2	60 - 80	Not established	Not established	Not classified

4. FIRST AID MEASURES

INHALATION : Remove to fresh air area and get medical attention.
EYE : Flush immediately with running water for at least 15 minutes and get medical attention.
SKIN : Wash with water and soap.
INGESTION : Dilute with water and get medical attention.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Auto-ignition temperature : 448°C
Flammability : LEL : Not available UEL : Not available
Flash point : Does not flash (>90°C)
(Tag closed cup & Cleveland opened cup)

EXTINGUISHING MEDIA

Suitable: Water, CO₂, Foam, Dry chemical.
Not to be used : None

FIRE FIGHTING INSTRUCTIONS

Special exposure hazards : Refer to section 10.
Special protect equipment for fire-fighters : Use self-contained breathing apparatus.

MATERIAL SAFETY DATA SHEET**6. ACCIDENTAL RELEASE MEASURES**

PERSONAL PRECAUTION : In case of ink vapor formation use respirator.
ENVIRONMENTAL PRECAUTION : Take care to minimize ink that reaches to a sewer.
METHODS FOR CLEANING UP : Wipe up ink with absorbent towel. Wash with water to remove remaining traces of ink.

7. HANDLING AND STORAGE

HANDLING : Avoid skin contact with ink. Prevent eye contact with ink.
STORAGE : Keep out of reach of children. Store in a cool, dark, and dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES : Refer to section 2.

EXPOSURE CONTROLS

Engineering controls : Ventilation is not required under normal use.
Personal protection
Respiratory protection : Not required under normal use.
Hand protection : Not required under normal use.
Eye protection : Not required under normal use.
Skin protection : Not required under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Black liquid
Auto-ignition temperature : 448°C
Boiling point : 104°C
Density : 1.08g/ml
Flammability : LEL : Not available UEL : Not available
Flash point : Does not flash (>90°C)
(Tag closed cup & Cleveland opened cup)
Freezing point : -15°C
Odor : Slight odor
Partition coefficient (n-octanol/water) : Not available
pH : 7 – 9
Solubility in water : Soluble
Vapor density (Air=1) : Not available
Vapor pressure : Not available
Viscosity : 2 – 5 mPa·s

MATERIAL SAFETY DATA SHEET

10. STABILITY AND REACTIVITY

STABILITY :	Stable
CONDITIONS TO AVOID :	None
MATERIALS TO AVOID :	Strong oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS :	Carbon monoxide, Carbon dioxide
HAZARDOUS POLYMERIZATION :	Does not occur

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity :	LD ₅₀ of ink is greater than 2500mg/kg.
Eye irritation :	Ink is classified as a NON IRRITANT.
Skin irritation :	Ink is classified as a NON IRRITANT.

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY :	Not available
BIOACCUMULATIVE POTENTIAL :	Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT) :	Not applicable
MARITIME TRANSPORT IMDG :	Not applicable
AIR TRANSPORT ICAO/IATA :	Not applicable

15. REGULATORY INFORMATION

US REGULATIONS

TSCA STATUS : All components in ink are listed on TSCA inventory.

EUROPEAN REGULATIONS

EU NOTIFICATION : All components in ink are listed on EINECS or NLP inventory.
EU HAZARD LABEL : Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC.

16. OTHER INFORMATION

The information relates only to this specific ink cartridge. It may not be valid for this ink cartridge, if used in combination with any other materials or in any other process. And it is based on our best knowledge as of the date of preparation (revision).

MATERIAL SAFETY DATA SHEET

Key

ACGIH TLV	TLV (Threshold Limit Value) under American Conference of Governmental Industrial Hygienists
DOT	Department Of Transportation (USA)
EINECS	European Inventory of Existing Commercial Chemical Substances (EU)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
NLP	No-Longer Polymers List (EU)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
OSHA HCS	Hazard Communication Standard issued by Occupational Safety and Health Administration (USA)
OSHA PEL	PEL (Permissible Exposure Limit) under Occupational Safety and Health Administration (USA)
TSCA	Toxic Substances Control Act (USA)

MATERIAL SAFETY DATA SHEET**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name	LC51M	LC1000M	LC57M	LC960M
Product Code	LK2085001	LK2331001	LK2379001	LK2480001
Product Name	LC37M	LC970M		
Product Code	LK3074001	LK2647001		
General Use	Inkjet printing			
Product Description	Water based ink cartridge for inkjet printing machine			
MSDS No.	BHM013			
Manufacturer	BROTHER INDUSTRIES, LTD. 5-1, Hamada-cho, Minami-ku, Nagoya 457-0822, JAPAN Telephone Number for Information +81-52-824-3445			
Importer in USA	BROTHER INTERNATIONAL CORPORATION 100 Somerset Corporate Boulevard, P.O.Box 6911, Bridgewater, NJ 08807-0911, USA Telephone Number for Information +1-800-284-4329			
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Importer in Australia	BROTHER INTERNATIONAL (AUST.) PTY. LTD. ACN 001 393 835 7 Khartoum Road, North Ryde, N.S.W. 2113 08875-6714, AUSTRALIA Telephone Number for Information +61-2-9887-4344			
Importer in Europe	BROTHER INTERNATIONAL EUROPE LTD. Brother house, 1 Tame Street, Guide Bridge, Audenshaw, Manchester M34 5JE, UK Telephone Number for Information +44-161-330-6531			

Please telephone to the above office during our business hours.

2. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW**

Ink in cartridge is dark red liquid with slight odor.

Keep out of reach of children.

Ink poses little or no immediate hazard if spilled.

POTENTIAL HEALTH EFFECTS

Inhalation :	Not expected to be a route of exposure under normal use
Eye :	Ink may cause slight irritation.
Skin :	Prolonged exposure to ink may cause irritation.
Ingestion :	Ink may cause gastrointestinal or other adverse effects.

CHRONIC EFFECTS / CARCINOGENICITY

Ingredients of ink have not been classified as carcinogens according to IARC monographs, NTP, and OSHA regulated.

MATERIAL SAFETY DATA SHEET

EU HAZARD LABEL

Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC. But ink has to bear the inscription: "Contains water soluble heterocyclic magenta azo dye compounds. May produce an allergic reaction."

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS# / EC#	% by weight	USA OSHA PEL	ACGIH TLV	EU Symbol / Risk Phrases
Glycerol	56-81-5 / 200-289-5	10 - 30	(as mist) Total dust TWA 15mg/m ³ Respirable fraction TWA 5mg/m ³	(as mist) Total dust TWA 10mg/m ³	Not classified
Triethylene glycol monobutyl ether	143-22-6 / 205-592-6	1 - 5	Not established	Not established	Xi / R41
Magenta dye	Registered	< 2.5	Not established	Not established	Xi / R36 Xi / R43 N / R51/53
Water	7732-18-5 / 231-791-2	60 - 80	Not established	Not established	Not classified

4. FIRST AID MEASURES

INHALATION : Remove to fresh air area and get medical attention.
EYE : Flush immediately with running water for at least 15 minutes and get medical attention.
SKIN : Wash with water and soap.
INGESTION : Dilute with water and get medical attention.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Auto-ignition temperature : 424°C
 Flammability : LEL : Not available UEL : Not available
 Flash point : Does not flash (>90°C)
 (Tag closed cup & Cleveland opened cup)

EXTINGUISHING MEDIA

Suitable: Water, CO₂, Foam, Dry chemical.
 Not to be used : None

FIRE FIGHTING INSTRUCTIONS

Special exposure hazards : Refer to section 10.
 Special protect equipment for fire-fighters : Use self-contained breathing apparatus.

MATERIAL SAFETY DATA SHEET**6. ACCIDENTAL RELEASE MEASURES**

PERSONAL PRECAUTION :	In case of ink vapor formation use respirator.
ENVIRONMENTAL PRECAUTION :	Take care to minimize ink that reaches to a sewer.
METHODS FOR CLEANING UP :	Wipe up ink with absorbent towel. Wash with water to remove remaining traces of ink.

7. HANDLING AND STORAGE

HANDLING :	Avoid skin contact with ink. Prevent eye contact with ink.
STORAGE :	Keep out of reach of children. Store in a cool, dark, and dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES :	Refer to section 2.
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EXPOSURE CONTROLS

Engineering controls :	Ventilation is not required under normal use.
Personal protection	
Respiratory protection :	Not required under normal use.
Hand protection :	Not required under normal use.
Eye protection :	Not required under normal use.
Skin protection :	Not required under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Dark red liquid
Auto-ignition temperature :	424°C
Boiling point :	105°C
Density :	1.08g/ml
Flammability :	LEL : Not available UEL : Not available
Flash point :	Does not flash (>90°C) (Tag closed cup & Cleveland opened cup)
Freezing point :	-18°C
Odor :	Slight odor
Partition coefficient (n-octanol/water) :	Not available
pH :	7 – 9
Solubility in water :	Soluble
Vapor density (Air=1) :	Not available
Vapor pressure :	Not available
Viscosity :	2 - 5 mPa·s

MATERIAL SAFETY DATA SHEET

10. STABILITY AND REACTIVITY

STABILITY :	Stable
CONDITIONS TO AVOID :	None
MATERIALS TO AVOID :	Strong oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS :	Carbon monoxide, Carbon dioxide
HAZARDOUS POLYMERIZATION :	Does not occur

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity :	LD ₅₀ of ink is greater than 2500mg/kg.
Eye irritation :	Ink is classified as a MINIMAL IRRITANT.
Skin irritation :	Ink is classified as a NON IRRITANT.

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY :	Not available
BIOACCUMULATIVE POTENTIAL :	Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT) :	Not applicable
MARITIME TRANSPORT IMDG :	Not applicable
AIR TRANSPORT ICAO/IATA :	Not applicable

15. REGULATORY INFORMATION

US REGULATIONS

TSCA STATUS : All components in ink are listed on TSCA inventory.

EUROPEAN REGULATIONS

EU NOTIFICATION : All components in ink are listed on EINECS or ELINCS or NLP inventory.

EU HAZARD LABEL : Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC. But ink has to bear the inscription: "Contains water soluble heterocyclic magenta azo dye compounds. May produce an allergic reaction."

MATERIAL SAFETY DATA SHEET**16. OTHER INFORMATION**

The information relates only to this specific ink cartridge. It may not be valid for this ink cartridge, if used in combination with any other materials or in any other process. And it is based on our best knowledge as of the date of preparation (revision).

EU Hazard Symbols :	Xi : Irritant N ; Dangerous for the environment
EU Risk (R) Phrase definitions :	R36 :Irritating to eyes. R41 : Risk of serious damage to eyes. R43 : May cause sensitization by skin contact. R51/53 : Toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.

Key

ACGIH TLV	TLV (Threshold Limit Value) under American Conference of Governmental Industrial Hygienists
DOT	Department Of Transportation (USA)
EINECS	European Inventory of Existing Commercial Chemical Substances (EU)
ELINCS	European List of Notified Chemical Substances (EU)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
NLP	No-Longer Polymers List (EU)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
OSHA HCS	Hazard Communication Standard issued by Occupational Safety and Health Administration (USA)
OSHA PEL	PEL (Permissible Exposure Limit) under Occupational Safety and Health Administration (USA)
TSCA	Toxic Substances Control Act (USA)

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	LC51C	LC1000C	LC57C	LC960C
Product Code	LK2084001	LK2333001	LK2373001	LK2473001
Product Name	LC37C	LC970C		
Product Code	LK3068001	LK2646001		
General Use	Inkjet printing			
Product Description	Water based ink cartridge for inkjet printing machine			
MSDS No.	BHC013			
Manufacturer	BROTHER INDUSTRIES, LTD. 5-1, Hamada-cho, Minami-ku, Nagoya 457-0822, JAPAN Telephone Number for Information +81-52-824-3445			
Importer in USA	BROTHER INTERNATIONAL CORPORATION 100 Somerset Corporate Boulevard, P.O.Box 6911, Bridgewater, NJ 08807-0911, USA Telephone Number for Information +1-800-284-4329			
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Please telephone to the above office during our business hours.

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Ink in cartridge is dark blue liquid with slight odor.
Keep out of reach of children.
Ink poses little or no immediate hazard if spilled.

POTENTIAL HEALTH EFFECTS

Inhalation : Not expected to be a route of exposure under normal use.
Eye : Ink may cause slight irritation.
Skin : Prolonged exposure to ink may cause irritation.
Ingestion : Ink may cause gastrointestinal or other adverse effects.

CHRONIC EFFECTS / CARCINOGENICITY

Ingredients of ink have not been classified as carcinogens according to IARC monographs, NTP, and OSHA regulated.

MATERIAL SAFETY DATA SHEET

EU HAZARD LABEL

Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC.

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS# / EC#	% by weight	USA OSHA PEL	ACGIH TLV	EU Symbol / Risk Phrases
Glycerol	56-81-5 / 200-289-5	10 - 30	(as mist) Total dust TWA 15mg/m ³ Respirable fraction TWA 5mg/m ³	(as mist) Total dust TWA 10mg/m ³	Not classified
Triethylene glycol monobutyl ether	143-22-6 / 205-592-6	1 - 5	Not established	Not established	Xi / R41
Cyan dye	Registered	1 - 5	Not established	Not established	Xi / R41
Water	7732-18-5 / 231-791-2	60 - 80	Not established	Not established	Not classified

4. FIRST AID MEASURES

INHALATION : Remove to fresh air area and get medical attention.
EYE : Flush immediately with running water for at least 15 minutes and get medical attention.
SKIN : Wash with water and soap.
INGESTION : Dilute with water and get medical attention.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Auto-ignition temperature : 399°C
 Flammability : LEL : Not available UEL : Not available
 Flash point : Does not flash (>90°C)
 (Tag closed cup & Cleveland opened cup)

EXTINGUISHING MEDIA

Suitable: Water, CO₂, Foam, Dry chemical.
 Not to be used : None

FIRE FIGHTING INSTRUCTIONS

Special exposure hazards : Refer to section 10.
 Special protect equipment for fire-fighters : Use self-contained breathing apparatus.

MATERIAL SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTION :	In case of ink vapor formation use respirator.
ENVIRONMENTAL PRECAUTION :	Take care to minimize ink that reaches to a sewer.
METHODS FOR CLEANING UP :	Wipe up ink with absorbent towel. Wash with water to remove remaining traces of ink.

7. HANDLING AND STORAGE

HANDLING :	Avoid skin contact with ink. Prevent eye contact with ink.
STORAGE :	Keep out of reach of children. Store in a cool, dark, and dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES : Refer to section 2.

EXPOSURE CONTROLS

Engineering controls :	Ventilation is not required under normal use.
Personal protection	
Respiratory protection :	Not required under normal use.
Hand protection :	Not required under normal use.
Eye protection :	Not required under normal use.
Skin protection :	Not required under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Dark blue liquid
Auto-ignition temperature :	399°C
Boiling point :	105°C
Density :	1.08g/ml
Flammability :	LEL : Not available UEL : Not available
Flash point :	Does not flash (>90°C) (Tag closed cup & Cleveland opened cup)
Freezing point :	-16°C
Odor :	Slight odor
Partition coefficient (n-octanol/water) :	Not available
pH :	7 – 9
Solubility in water :	Soluble
Vapor density (Air=1) :	Not available
Vapor pressure :	Not available
Viscosity :	2 - 5 mPa·s

MATERIAL SAFETY DATA SHEET**10. STABILITY AND REACTIVITY**

STABILITY :	Stable
CONDITIONS TO AVOID :	None
MATERIALS TO AVOID :	Strong oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS :	Carbon monoxide, Carbon dioxide
HAZARDOUS POLYMERIZATION :	Does not occur

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity :	LD ₅₀ of ink is greater than 2500mg/kg.
Eye irritation :	Ink is classified as a MINIMAL IRRITANT.
Skin irritation :	Ink is classified as a NON IRRITANT.

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY :	Not available
BIOACCUMULATIVE POTENTIAL :	Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT) :	Not applicable
MARITIME TRANSPORT IMDG :	Not applicable
AIR TRANSPORT ICAO/IATA :	Not applicable

15. REGULATORY INFORMATION**US REGULATIONS**

TSCA STATUS : All components in ink are listed on TSCA inventory.

EUROPEAN REGULATIONS

EU NOTIFICATION :	All components in ink are listed on EINECS or ELINCS or NLP inventory.
EU HAZARD LABEL :	Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC.

16. OTHER INFORMATION

The information relates only to this specific ink cartridge. It may not be valid for this ink cartridge, if used in combination with any other materials or in any other process. And it is based on our best knowledge as of the date of preparation (revision).

EU Hazard Symbols :	Xi : Irritant
EU Risk (R) Phrase definitions :	R41 : Risk of serious damage to eyes.

MATERIAL SAFETY DATA SHEET

Key

ACGIH TLV	TLV (Threshold Limit Value) under American Conference of Governmental Industrial Hygienists
DOT	Department Of Transportation (USA)
EINECS	European Inventory of Existing Commercial Chemical Substances (EU)
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OSHA	Occupational Safety and Health Administration (USA)
OSHA HCS	Hazard Communication Standard issued by Occupational Safety and Health Administration (USA)
OSHA PEL	PEL (Permissible Exposure Limit) under Occupational Safety and Health Administration (USA)
TSCA	Toxic Substances Control Act (USA)

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	LC51Y	LC1000Y	LC57Y	LC960Y
Product Code	LK2086001	LK2332001	LK2385001	LK2486001
Product Name	LC37Y	LC970Y		
Product Code	LK3078001	LK2648001		
General Use	Inkjet printing			
Product Description	Water based ink cartridge for inkjet printing machine.			
MSDS No.	BHY013			
Manufacturer	BROTHER INDUSTRIES, LTD. 5-1, Hamada-cho, Minami-ku, Nagoya 457-0822, JAPAN Telephone Number for Information +81-52-824-3445			
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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Ink in cartridge is dark yellow liquid with slight odor.

Keep out of reach of children.

Ink poses little or no immediate hazard if spilled.

POTENTIAL HEALTH EFFECTS

Inhalation :	Not expected to be a route of exposure under normal use.
Eye :	Ink may cause slight irritation.
Skin :	Prolonged exposure to ink may cause irritation.
Ingestion :	Ink may cause gastrointestinal or other adverse effects.

MATERIAL SAFETY DATA SHEET

CHRONIC EFFECTS / CARCINOGENICITY

Ingredients of ink have not been classified as carcinogens according to IARC monographs, NTP, and OSHA regulated.

EU HAZARD LABEL

Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC.

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS# / EC#	% by weight	USA OSHA PEL	ACGIH TLV	EU Symbol / Risk Phrases
Glycerol	56-81-5 / 200-289-5	10 - 30	(as mist) Total dust TWA 15mg/m ³ Respirable fraction TWA 5mg/m ³	(as mist) Total dust TWA 10mg/m ³	Not classified
Diethylene glycol	111-46-6 / 203-872-2	1 - 8	Not established	Not established	Xn / R22
Triethylene glycol monobutyl ether	143-22-6 / 205-592-6	1 - 5	Not established	Not established	Xi / R41
Water	7732-18-5 / 231-791-2	50 - 70	Not established	Not established	Not established

4. FIRST AID MEASURES

INHALATION : Remove to fresh air area and get medical attention.
 EYE : Flush immediately with running water for at least 15 minutes and get medical attention.
 SKIN : Wash with water and soap.
 INGESTION : Dilute with water and get medical attention.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Auto-ignition temperature : 418°C
 Flammability : LEL : Not available UEL : Not available
 Flash point : Does not flash (>90°C)
 (Tag closed cup & Cleveland opened cup)

EXTINGUISHING MEDIA

Suitable: Water, CO₂, Foam, Dry chemical.
 Not to be used : None

FIRE FIGHTING INSTRUCTIONS

Special exposure hazards : Refer to section 10.
 Special protect equipment for fire-fighters : Use self-contained breathing apparatus.

MATERIAL SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTION :	In case of ink vapor formation use respirator.
ENVIRONMENTAL PRECAUTION :	Take care to minimize ink that reaches to a sewer.
METHODS FOR CLEANING UP :	Wipe up ink with absorbent towel. Wash with water to remove remaining traces of ink.

7. HANDLING AND STORAGE

HANDLING :	Avoid skin contact with ink. Prevent eye contact with ink.
STORAGE :	Keep out of reach of children. Store in a cool, dark, and dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES :	Refer to section 2.
EXPOSURE CONTROLS	
Engineering controls :	Ventilation is not required under normal use.
Personal protection	
Respiratory protection :	Not required under normal use.
Hand protection :	Not required under normal use.
Eye protection :	Not required under normal use.
Skin protection :	Not required under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Dark yellow liquid
Auto-ignition temperature :	418°C
Boiling point :	105°C
Density :	1.06 g/ml
Flammability :	LEL : Not available UEL : Not available
Flash point :	Does not flash (>90°C) (Tag closed cup & Cleveland opened cup)
Freezing point :	-18°C
Odor :	Slight odor
Partition coefficient (n-octanol/water) :	Not available
pH :	7 – 9
Solubility in water :	Soluble
Vapor density (Air=1) :	Not available
Vapor pressure :	Not available
Viscosity :	2 - 5 mPa·s

MATERIAL SAFETY DATA SHEET**10. STABILITY AND REACTIVITY**

STABILITY :	Stable
CONDITIONS TO AVOID :	None
MATERIALS TO AVOID :	Strong oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS :	Carbon monoxide, Carbon dioxide
HAZARDOUS POLYMERIZATION :	Does not occur

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity :	LD ₅₀ of ink is greater than 2500mg/kg.
Eye irritation :	Ink is classified as a MINIMAL IRRITANT.
Skin irritation :	Ink is classified as a NON IRRITANT.

12. ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY :	Not available
BIOACCUMULATIVE POTENTIAL :	Not available

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT) :	Not applicable
MARITIME TRANSPORT IMDG :	Not applicable
AIR TRANSPORT ICAO/IATA :	Not applicable

15. REGULATORY INFORMATION**US REGULATIONS**

TSCA STATUS : All components in ink are listed on TSCA inventory.

EUROPEAN REGULATIONS

EU NOTIFICATION : All components in ink are listed in EINECS or NLP Inventory.
EU HAZARD LABEL : Ink does not need to be labeled in accordance with EC-Directive 1999/45/EC.

16. OTHER INFORMATION

The information relates only to this specific ink cartridge. It may not be valid for this ink cartridge, if used in combination with any other materials or in any other process. And it is based on our best knowledge as of the date of preparation (revision).

EU Hazard Symbols :	Xn : Harmful Xi : Irritant
EU Risk (R) Phrase definitions :	R22 : Harmful if swallowed. R41 : Risk of serious damage to eyes.

MATERIAL SAFETY DATA SHEET

Key

ACGIH TLV	TLV (Threshold Limit Value) under American Conference of Governmental Industrial Hygienists
DOT	Department Of Transportation (USA)
EINECS	European Inventory of Existing Commercial Chemical Substances (EU)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
NLP	No-Longer Polymers List (EU)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
OSHA HCS	Hazard Communication Standard issued by Occupational Safety and Health Administration (USA)
OSHA PEL	PEL (Permissible Exposure Limit) under Occupational Safety and Health Administration (USA)
TSCA	Toxic Substances Control Act (USA)