EVOLUTION™

SAFETY DATA SHEET
4770BK

1. Identification

Product identifier

Product name 4770BK

Product number 71216273

Container size Single Use Cartridge

Recommended use of the chemical and restrictions on use

Application Printing ink.

Uses advised against Use only for intended applications.

Details of the supplier of the safety data sheet

Supplier
Evolution
A Matthews Marking Systems Company
3159 Unionville Road, Suite 500
Cranberry Township, PA 16066

Manufacturer
Matthews Marking Systems
Zona Franca La Lima
Multitenant #8
Cartago, Costa Rica 30106
(506) 4000-1103

Emergency telephone number

Emergency telephone Chemtrec US : 1-800-424-9300 Chemtrec World: 1-703-527-3887

2. Hazard(s) identification

Classification of the substance or mixture

OSHA Regulatory Status This Product is Hazardous under the OSHA Hazard Communication Standard.

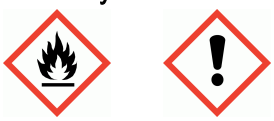
Physical hazards Flam. Liq. 2 - H225

Health hazards Eye Irrit. 2A - H319 STOT SE 3 - H335

Environmental hazards Not Classified

Label elements

Hazard symbols



Signal word Danger

Hazard statements
H225 Highly flammable liquid and vapor.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a poison center/ doctor if you feel unwell.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/ container in accordance with national regulations.

3. Composition/information on ingredients

Mixtures

Methyl Ethyl Ketone **50-<80%**

CAS number: 78-93-3

Classification
Flam. Liq. 2 - H225
Eye Irrit. 2A - H319
STOT SE 3 - H335

Cyclohexanone **5-<10%**

CAS number: 108-94-1

Classification
Flam. Liq. 3 - H226
Acute Tox. 4 - H332

Solvent Black 29 **1-<5%**

CAS number: 61901-87-9

Classification
Eye Irrit. 2B - H320
Aquatic Chronic 2 - H411

Ethanol **1-<5%**

CAS number: 64-17-5

Classification
Flam. Liq. 2 - H225
Eye Irrit. 2A - H319

The full text for all hazard statements is displayed in Section 16.

Composition comments

This material does not contain any Hazardous Air Pollutants (HAPS) as defined by the Clean Air Act under the US Environmental Protection Agency (EPA).

Ingredient notes

The exact percentage/concentration is withheld as a trade secret in accordance with 29 CFR 1910.1200. The exact identity is withheld as a trade secret in accordance with 29 CFR 1910.1200.

4. First-aid measures

Description of first aid measures

General information	Consult a physician for specific advice. If medical advice is needed, have product container or label at hand. If in doubt, get medical attention promptly. Show this Safety Data Sheet to the medical personnel.
Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. If breathing stops, provide artificial respiration. Consult a physician for specific advice.
Ingestion	Do not induce vomiting. Rinse nose and mouth with water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact	Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing. Wash clothing and clean shoes thoroughly before reuse.
Eye contact	Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

Most important symptoms and effects, both acute and delayed

General information	The product is considered to be a low hazard under normal conditions of use. The severity of the symptoms described will vary dependent on the concentration and the length of exposure. See Section 11 for additional information on health hazards.
Inhalation	Vapors may irritate throat/respiratory system. May cause coughing and difficulties in breathing. Overexposure to organic solvents may depress the central nervous system, causing dizziness and intoxication and, at very high concentrations, unconsciousness and death.
Ingestion	May cause irritation. May cause nausea, headache, dizziness and intoxication. May cause stomach pain or vomiting. May cause liver and/or renal damage.
Skin contact	May be absorbed through the skin. Prolonged or repeated contact with skin may cause irritation, redness and dermatitis.
Eye contact	This product is strongly irritating. Symptoms following overexposure may include the following: Severe irritation, burning, tearing and blurred vision. Prolonged contact causes serious eye and tissue damage.

Indication of immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	Water spray.

Special hazards arising from the substance or mixture

Flammability Class	7.1 Flammable Liquid IB.
Specific hazards	Flammable liquid and vapour. Vapors are heavier than air and may spread near ground and travel a considerable distance to a source of ignition and flash back.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Carbon dioxide (CO2). Carbon monoxide (CO).

Advice for firefighters

Protective actions during firefighting	Evacuate area. Stop leak if safe to do so. Use water to keep fire exposed containers cool and disperse vapors. Use water spray to reduce vapors.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions	No smoking, sparks, flames or other sources of ignition near spillage. Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors. Wash thoroughly after dealing with a spillage. Ensure procedures and training for emergency decontamination and disposal are in place.

Environmental precautions

Environmental precautions	Avoid release to the environment. Do not discharge into drains or watercourses or onto the ground. Use appropriate containment to avoid environmental contamination. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

Methods and material for containment and cleaning up

Methods for cleaning up	Eliminate all sources of ignition. Stop leak if safe to do so. Do not touch or walk into spilled material. Take care as floors and other surfaces may become slippery. Contain and absorb spillage with sand, earth or other non-combustible material. Collect and place in suitable waste disposal containers and seal securely. When handling waste, the safety precautions applying to handling of the product should be considered. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.
Reference to other sections	For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions	Wear protective clothing as described in Section 8 of this safety data sheet.
Advice on general occupational hygiene	Do not eat, drink or smoke when using this product. Provide eyewash station and safety shower. Good personal hygiene procedures should be implemented. Wash skin thoroughly after handling. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Storage precautions	Store at temperatures between 4.4°C/40°F and 32.2°C/90°F. Keep only in the original container in a cool, well-ventilated place. Protect from freezing and direct sunlight. Container must be kept tightly closed when not in use. Keep containers upright. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Store in accordance with national regulations.
Storage class	Flammable liquid storage.

Specific end uses(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.

8. Exposure controls/Personal protection

Control parameters

Occupational exposure limits

Methyl Ethyl Ketone

Long-term exposure limit (8-hour TWA): ACGIH 200 ppm 590 mg/m³
Short-term exposure limit (15-minute): ACGIH 300 ppm 885 mg/m³
Long-term exposure limit (8-hour TWA): OSHA 200 ppm 590 mg/m³

Cyclohexanone

Long-term exposure limit (8-hour TWA): OSHA 50 ppm 200 mg/m³
Long-term exposure limit (8-hour TWA): ACGIH 20 ppm
Short-term exposure limit (15-minute): ACGIH 50 ppm
A3, Sk

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Long-term exposure limit (8-hour TWA): OSHA 0.5 mg/m³

Ethanol

Short-term exposure limit (15-minute): ACGIH 1000 ppm 1880 mg/m³
A3
Long-term exposure limit (8-hour TWA): OSHA 1000 ppm 1900 mg/m³
ACGIH = American Conference of Governmental Industrial Hygienists.
OSHA = Occupational Safety and Health Administration.
A3 = Confirmed Animal Carcinogen with Unknown Relevance to Humans.
Sk = Danger of cutaneous absorption.

Ingredient comments Data based on literature. Product not tested.

Methyl Ethyl Ketone (CAS: 78-93-3)

Immediate danger to life and health 3000 ppm

Cyclohexanone (CAS: 108-94-1)

Immediate danger to life and health 700 ppm

Ethanol (CAS: 64-17-5)

Immediate danger to life and health 3300 ppm

Exposure controls

Protective equipment

Appropriate engineering controls As this product contains ingredients with exposure limits, process enclosures, local exhaust ventilation or other engineering controls should be used to keep worker exposure below any statutory or recommended limits, if use generates dust, fumes, gas, vapor or mist. Use explosion-proof ventilating equipment.

Eye/face protection Wear tight-fitting, chemical splash goggles or face shield.

Hand protection It is recommended that chemical-resistant, impervious gloves are worn. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. It is recommended that gloves are made of the following material: Butyl rubber. Nitrile rubber. Rubber (natural, latex). Frequent changes are recommended.

Other skin and body protection	Avoid contact with skin. Wear appropriate clothing to prevent repeated or prolonged skin contact.
Hygiene measures	Wash contaminated skin thoroughly after handling. Provide eyewash station and safety shower.
Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. Wear a respirator fitted with the following cartridge: Organic vapor filter.
Thermal hazards	If there is a risk of contact with hot product, all protective equipment worn should be suitable for use with high temperatures.
Environmental exposure controls	Keep container tightly sealed when not in use.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Colored liquid.
Color	Black.
Odor	Ketonic.
Melting point	-47°C/-53°F
Initial boiling point and range	79°C/147°F @ 760 mm Hg
Flash point	-9°C/16°F Closed cup.
Evaporation rate	3.7 (butyl acetate = 1)
Upper/lower flammability or explosive limits	Upper flammable/explosive limit: 11.5 % vol Lower flammable/explosive limit: 1.1 % vol
Vapor pressure	71.25 mm Hg @ 20°C/68°F
Vapor density	3.39
Relative density	0.840 g/cc 840 g/l 7.01 lbs/gal
Solubility(ies)	Soluble in the following materials: Ketones. Slightly soluble in water.
Partition coefficient	log Pow: 0.81
Auto-ignition temperature	404°C/759°F
Decomposition Temperature	Not applicable.
Explosive properties	Not applicable.
Oxidizing properties	Not applicable.
Comments	Information given is applicable to the product as supplied. Information declared as "Not available" or "Not applicable" is not considered to be relevant to the implementation of the proper control measures.
Volatile organic compound	This product contains a maximum VOC content of 765 g/l. This product contains a maximum VOC content of 6.38 lbs/gal.
HAPS Content	0.00

10. Stability and reactivity

Reactivity	There are no known reactivity hazards associated with this product.

Stability	Stable at normal ambient temperatures and when used as recommended.
Conditions to avoid	Avoid the following conditions: Heat, sparks, flames. Freezing.
Materials to avoid	Avoid contact with the following materials: Acids. Alkalis. Strong oxidizing agents.
Hazardous decomposition products	Heating may generate the following products: Carbon dioxide (CO2). Carbon monoxide (CO).

11. Toxicological information

Information on toxicological effects

Toxicological effects Information given is based on data of the components and of similar products.

Acute toxicity - inhalation

ATE inhalation (vapours mg/l) 145.7

Specific target organ toxicity - single exposure

Target organs Central nervous system Eyes Gastro-intestinal tract Respiratory system, lungs Skin

Specific target organ toxicity - repeated exposure

Target organs Gastro-intestinal tract Reproductive organs Skin

Toxicological information on ingredients.

Methyl Ethyl Ketone

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} vapours mg/l)	32,000.0
ATE inhalation (vapours mg/l)	32,000.0

Serious eye damage/irritation

Serious eye damage/irritation	Causes serious eye irritation.

Cyclohexanone

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} vapours mg/l)	15.0
ATE inhalation (vapours mg/l)	15.0

Skin corrosion/irritation

Skin corrosion/irritation	Irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation	Causes serious eye damage.

Carcinogenicity

IARC carcinogenicity	IARC Group 3 Not classifiable as to its carcinogenicity to humans.

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Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	2,000.1
Species	Rat
ATE oral (mg/kg)	2,000.1

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	2,000.1
Species	Rat
ATE dermal (mg/kg)	2,000.1

Ethanol

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} vapours mg/l)	30,000.0
ATE inhalation (vapours mg/l)	30,000.0

Serious eye damage/irritation

Serious eye damage/irritation	Causes eye irritation.

Carcinogenicity

Carcinogenicity	Ethyl alcohol is only considered a carcinogenic and developmental hazard when ingested as an alcoholic beverage.
IARC carcinogenicity	IARC Group 1 Carcinogenic to humans.
NTP carcinogenicity	Known carcinogen.
OSHA Carcinogenicity	Listed as a carcinogen under OSHA

12. Ecological information

Ecological information on ingredients.

Methyl Ethyl Ketone

Acute aquatic toxicity

Acute toxicity - fish	LC_{50}, : 1690 mg/l, Lepomis macrochirus (Bluegill) LC_{50}, : 3220 mg/l, Pimephales promelas (Fat-head Minnow)

Cyclohexanone

Acute aquatic toxicity

Acute toxicity - fish	LC_{50}, 96 hours: >100 mg/l, Pimephales promelas (Fat-head Minnow)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: >100 mg/l, Daphnia magna

Acute toxicity - aquatic plants	EC_{50}, 72 hours: >100 mg/l, Desmodesmus subspicatus
Acute toxicity - microorganisms	EC_{50}, 30 minutes: >1000 mg/l, Activated sludge

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Acute aquatic toxicity

Acute toxicity - fish	LC_{50}, : 2.0 mg/l, Fish
Acute toxicity - aquatic invertebrates	EC_{80}, : 1000 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 96 hours: >0.42 mg/l, Algae

Ethanol

Acute aquatic toxicity

Acute toxicity - fish	LC_{50}, 96 hours: 14,200 mg/l, Pimephales promelas (Fat-head Minnow)
Acute toxicity - aquatic invertebrates	NOEC, 9 days: 9.6 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: 275 mg/l, Freshwater algae

Persistence and degradability

Ecological information on ingredients.

Cyclohexanone

Biodegradation	Soil - Degradation 90 - 100: 28 days

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Persistence and degradability	Not readily biodegradable.

Bioaccumulative potential

Partition coefficient log Pow: 0.81

Ecological information on ingredients.

Cyclohexanone

Partition coefficient	log Pow: 0.81

Ethanol

Partition coefficient	log Pow: -0.32

Mobility in soil

Mobility No data available.

Other adverse effects

Other adverse effects Not applicable.

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13. Disposal considerations

Waste treatment methods

General information The generation of waste should be minimized or avoided wherever possible. When handling waste, the safety precautions applying to handling of the product should be considered. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. Dispose of waste product or used containers in accordance with local regulations Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.

Disposal methods Dispose of contents/container in accordance with national regulations. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. When handling waste, the safety precautions applying to handling of the product should be considered.

14. Transport information

UN Number

UN No. (TDG) 1210

UN No. (IMDG) 1210

UN No. (ICAO) 1210

UN No. (DOT) 1210

UN proper shipping name

Proper shipping name (TDG) PRINTING INK

Proper shipping name (IMDG) PRINTING INK

Proper shipping name (ICAO) PRINTING INK

Proper shipping name (DOT) PRINTING INK

Transport hazard class(es)

TDG class 3

TDG label(s) 3

IMDG Class 3

ICAO class/division 3

Transport labels

Packing group

TDG Packing Group II

IMDG packing group II

ICAO packing group II

DOT packing group II

Environmental hazards

Environmentally Hazardous Substance

No.

Special precautions for user

EmS F-E, S-D

15. Regulatory information

Regulatory References OSHA Hazard Communication Standard, 29 CFR 1910.1200

US Federal Regulations

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

Methyl Ethyl Ketone

Final CERCLA RQ: 5000(2270) pounds (Kilograms)

Cyclohexanone

Final CERCLA RQ: 5000(2270) pounds (Kilograms)

SARA (311/312) Hazard Categories

Solvent Black 29

Acute

Methyl Ethyl Ketone

Fire
Acute
Chronic

Cyclohexanone

Fire
Acute
Chronic

Ethanol

Acute
Chronic
Fire

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins

Ethanol

Carcinogen and developmental toxin.

California Air Toxics "Hot Spots" (A-I)

Methyl Ethyl Ketone

California Directors List of Hazardous Substances

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Massachusetts "Right To Know" List

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Rhode Island "Right To Know" List

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Minnesota "Right To Know" List

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

New Jersey "Right To Know" List

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Pennsylvania "Right To Know" List

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Inventories

EU - EINECS/ELINCS

All the ingredients are listed or exempt.

Canada - DSL/NDSL

All the ingredients are listed or exempt.

US - TSCA

All the ingredients are listed or exempt.

Australia - AICS

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Japan - ENCS

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Korea - KECI

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

China - IECSC

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Philippines - PICCS

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

New Zealand - NZIOC

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

Taiwan - TCSI

The following ingredients are listed:

Methyl Ethyl Ketone

Cyclohexanone

Ethanol

16. Other information

Issued by	Matthews Marking Systems - Chemical Services Department
Revision date	9/30/2021
Revision	1
SDS No.	6107
SDS status	Approved.
Hazard statements in full	H225 Highly flammable liquid and vapor. H226 Flammable liquid and vapor. H319 Causes serious eye irritation. H320 Causes eye irritation. H332 Harmful if inhaled. H335 May cause respiratory irritation. H411 Toxic to aquatic life with long lasting effects.
NFPA - health hazard	Temporary incapacitation, injury. (2)
NFPA - flammability hazard	Ignites easily. (3)
NFPA - instability hazard	Normally stable. (0)
ACA HMIS Health rating.	Moderate hazard. (2) Chronic hazard. (*)

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ACA HMIS Flammability rating.	Ignites easily. (3)
ACA HMIS Physical hazard rating.	Normally stable. (0)
ACA HMIS Personal protection rating.	C