MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**Multipurpose & Oneshot Cartridges Ink**
Revision date	04-24-2012
Version #	01
CAS #	Mixture
Product use	Marking.
Manufacturer/Supplier	Diagraph MSP 5307 Meadowland Parkway Marion IL 62959 msds@diagraphmsp.com Contact Person: Customer Service 800-521-3047
Emergency	Emergency telephone 800-535-5053 (US only) +1-352-323-3500 international

2. Hazards Identification

Physical state	Liquid.
Appearance	Colored liquid.
Emergency overview	WARNING FLAMMABLE LIQUID AND VAPOR. Causes eye and respiratory tract irritation.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Causes eye irritation.
Skin	Prolonged exposure may cause skin irritation.
Inhalation	Causes respiratory tract irritation.
Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.
Chronic effects	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Contains organic solvents which in case of overexposure may depress the central nervous system causing dizziness and intoxication.
Signs and symptoms	Exposed individuals may experience eye tearing, redness, and discomfort. Vapors may cause drowsiness and dizziness. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Potential environmental effects	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
4-hydroxy-4-methylpentan-2-one	123-42-2	42 - 50
Titanium dioxide	13463-67-7	0 - 12
Carbon black	1333-86-4	0 - 9
29H,31H-Phthalocyaninato(2-)-N29,N30,N31,N32 copper	147-14-8	0 -4
2-Methoxy-1-methylethyl acetate	108-65-6	0.5 - 2.0

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Continue rinsing. Get medical attention immediately.
Skin contact	Take off contaminated clothing and wash before reuse. Wash off with warm water and soap. Get medical attention if irritation develops and persists.
Inhalation	Move injured person into fresh air and keep person calm under observation. If necessary, seek hospital and take along these instructions.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Get medical attention if any discomfort continues.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

5. Fire Fighting Measures

Flammable properties	The product is flammable, and heating may generate vapors which may form explosive vapor/air mixtures. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

Protection of firefighters

Protective equipment and precautions for firefighters	Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental Release Measures

Personal precautions	Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate. See Section 8 of the MSDS for Personal Protective Equipment.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground unless authorized by permit.
Methods for containment	Stop leak if you can do so without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Extinguish all flames in the vicinity. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

7. Handling and Storage

Handling	Do not smoke and do not spray near an open flame or other sources of ignition. Vapors are heavier than air and may travel along the floor and in the bottom of containers. Vapors may be ignited by a spark, a hot surface or an ember. The product is flammable, and heating may generate vapors which may form explosive vapor/air mixtures. All equipment used when handling the product must be grounded. Local exhaust is recommended. Observe good industrial hygiene practices. Use Personal Protective Equipment recommended in section 8 of the MSDS.

Storage Follow rules for flammable liquids. Do not store near heat sources or expose to high temperatures. Keep away from heat, sparks and open flame. Store in a closed container away from incompatible materials. Store between 35°F (2°C) and 120°F (49°C).

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
4-hydroxy-4-methylpentan-2-one (123-42-2)	TWA	50 ppm	
Carbon black (1333-86-4)	TWA	3 mg/m3	Inhalable fraction.
Titanium dioxide (13463-67-7)	TWA	10 mg/m3	

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
4-hydroxy-4-methylpentan-2-one (123-42-2)	PEL	240 mg/m3	
		50 ppm	
Carbon black (1333-86-4)	PEL	3.5 mg/m3	
Titanium dioxide (13463-67-7)	PEL	15 mg/m3	Total dust.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
4-hydroxy-4-methylpentan-2-one (123-42-2)	TWA	238 mg/m3
		50 ppm
Carbon black (1333-86-4)	TWA	3.5 mg/m3
Titanium dioxide (13463-67-7)	TWA	10 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
2-Methoxy-1-methylethyl acetate (108-65-6)	STEL	75 ppm	
	TWA	50 ppm	
4-hydroxy-4-methylpentan-2-one (123-42-2)	TWA	50 ppm	
Carbon black (1333-86-4)	TWA	3.5 mg/m3	
Titanium dioxide (13463-67-7)	TWA	3 mg/m3	Respirable fraction.
		10 mg/m3	Total dust.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
2-Methoxy-1-methylethyl acetate (108-65-6)	TWA	270 mg/m3
		50 ppm
4-hydroxy-4-methylpentan-2-one (123-42-2)	STEL	360 mg/m3
		75 ppm
	TWA	240 mg/m3
		50 ppm
Carbon black (1333-86-4)	TWA	3.5 mg/m3
Titanium dioxide (13463-67-7)	TWA	10 mg/m3

Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
4-hydroxy-4-methylpentan-2-one (123-42-2)	TWA	238 mg/m3	
		50 ppm	
Carbon black (1333-86-4)	TWA	3.5 mg/m3	
Titanium dioxide (13463-67-7)	TWA	10 mg/m3	Total dust.

Mexico. Occupational Exposure Limit Values

Components	Type	Value
4-hydroxy-4-methylpentan-2-one (123-42-2)	STEL	360 mg/m3
		75 ppm
	TWA	240 mg/m3
		50 ppm
Carbon black (1333-86-4)	STEL	7 mg/m3
	TWA	3.5 mg/m3
Titanium dioxide (13463-67-7)	STEL	20 mg/m3
	TWA	10 mg/m3

Engineering controls Observe Occupational Exposure Limits and minimize the risk of inhalation. Explosion-proof general and local exhaust ventilation. Provide easy access to water supply or an emergency shower.

Personal protective equipment

Eye / face protection Wear approved safety goggles.

Skin protection Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use positive pressure, air-supplied respirator for uncontrolled releases or when air purifying respirator limitations may be exceeded. Follow respirator protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Appearance Colored liquid.

Color Various.

Odor Characteristic.

Odor threshold Not available.

Physical state Liquid.

Form Liquid.

pH Not available.

Melting point Not available.

Freezing point Not available.

Boiling point 302 °F (150 °C)

Flash point 132.8 °F (56 °C)

Evaporation rate Not available.

Flammability limits in air, upper, % by volume 8.1 % v/v

Flammability limits in air, lower, % by volume 1.4 % v/v

Vapor pressure 1.1 hPa (20°C/68°F)

Vapor density Not available.

Specific gravity Not available.

Solubility (water) Not soluble in water.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not applicable.

Decomposition temperature Not available.

Density 1.2139 g/cm³ (20°C/68°F)

10. Chemical Stability & Reactivity Information

Chemical stability	The product is stable and non reactive under normal conditions of use, storage and transport.
Conditions to avoid	Contact with incompatible materials. Keep away from heat, sparks and open flame.
Incompatible materials	Strong oxidizing agents. Strong acids. Strong bases. Alkali metals. Halogens.
Hazardous decomposition products	No hazardous decomposition products are known.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components	Test Results
2-Methoxy-1-methylethyl acetate (108-65-6)	Acute Dermal LD50 Rabbit: > 5000 mg/kg
4-hydroxy-4-methylpentan-2-one (123-42-2)	Acute Oral LD50 Rat: 8532 mg/kg Acute Dermal LD50 Rabbit: 14.5 ml/kg
Carbon black (1333-86-4)	Acute Oral LD50 Rat: 4 g/kg Acute Dermal LD50 Rabbit: > 3 g/kg
29H,31H-Phthalocyaninato(2-)-N29,N30,N31,N32 copper (147-14-8)	Acute Oral LD50 Rat: > 8000 mg/kg Acute Oral Rat: 15000 mg/kg

Toxicological information	Occupational exposure to the substance or mixture may cause adverse effects.
Acute effects	May cause discomfort if swallowed.
Local effects	Causes eye and respiratory tract irritation.
Chronic effects	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. The product contains organic solvents which may be absorbed into the body by skin contact and cause permanent damage to the nervous system, including the brain.
Carcinogenicity	Inhalation of carbon black dust may cause cancer, however due to the physical form of the product, inhalation of dust is not likely. Titanium dioxide is considered carcinogenic only when in an inhalable powdered form.

ACGIH Carcinogens

Carbon black (CAS 1333-86-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Titanium dioxide (CAS 13463-67-7)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Carbon black (CAS 1333-86-4)	2B Possibly carcinogenic to humans.
Titanium dioxide (CAS 13463-67-7)	2B Possibly carcinogenic to humans.

Mutagenicity	No data available.
Reproductive effects	No data available.
Symptoms and target organs	Exposed individuals may experience eye tearing, redness, and discomfort. Vapors may cause drowsiness and dizziness. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

12. Ecological Information

Ecotoxicological data

Components	Test Results
4-hydroxy-4-methylpentan-2-one (123-42-2)	LC50 Inland silverside (Menidia beryllina): 420 mg/l 96 hours
Titanium dioxide (13463-67-7)	EC50 Water flea (Daphnia magna): > 1000 mg/l 48 hours LC50 Mummichog (Fundulus heteroclitus): > 1000 mg/l 96 hours

Ecotoxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	No data available.

Bioaccumulation / Accumulation	No data available.
Partition coefficient (n-octanol/water)	Not available.
Mobility in environmental media	The product is partially soluble in water. It will partially dissolve in water and partially spread on water surfaces while some of the components will eventually sediment in water systems. The volatile components of the product will spread in the atmosphere.

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 °F
Disposal instructions	Dispose in accordance with all applicable regulations.
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

Read safety instructions, MSDS and emergency procedures before handling.

DOT

Basic shipping requirements:

UN number	UN1210
Proper shipping name	Printing ink, flammable
Hazard class	3
Packing group	III
Special precautions	Read safety instructions, MSDS and emergency procedures before handling.
Labels required	3

Additional information:

Special provisions	B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	173
Packaging bulk	242

IATA

Basic shipping requirements:

UN number	UN1210
Proper shipping name	Printing ink
Hazard class	3
Packing group	III
Special precautions	Read safety instructions, MSDS and emergency procedures before handling.

Additional information:

ERG code	3L

IMDG

Basic shipping requirements:

UN number	UN1210
Proper shipping name	PRINTING INK
Hazard class	3
Packing group	III

Environmental hazards

Marine pollutant	No
EmS No.	F-E, S-D
Special precautions	Read safety instructions, MSDS and emergency procedures before handling.

TDG

Basic shipping requirements:

Proper shipping name	PRINTING INK, flammable
Hazard class	3
UN number	UN1210
Packing group	III

Additional information:

Special provisions	59, 83

15. Regulatory Information

US federal regulations

This product is hazardous according to OSHA 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

TSCA Section 12(b) Export Notification(40 CFR 707, Subpt. D)

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance (40 CRF 355, Appendix A)	No
Section 311/312 (40 CFR 370)	Yes

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15) Not controlled

Canadian regulations This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status Controlled

WHMIS classification

B3 - Flammable/Combustible
D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Hazardous Substances (Director's): Listed substance

4-hydroxy-4-methylpentan-2-one (CAS 123-42-2)	Listed.
Carbon black (CAS 1333-86-4)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Carbon black (CAS 1333-86-4)	Listed.
Titanium dioxide (CAS 13463-67-7)	Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Carbon black (CAS 1333-86-4)	Listed: February 21, 2003 Carcinogenic.
Titanium dioxide (CAS 13463-67-7)	Listed: September 2, 2011 Carcinogenic.

US - Massachusetts RTK - Substance: Listed substance

4-hydroxy-4-methylpentan-2-one (CAS 123-42-2)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Titanium dioxide (CAS 13463-67-7)	Listed.

US - New Jersey RTK - Substances: Listed substance

29H,31H-Phthalocyaninato(2-)-N29,N30,N31,N32 copper (CAS 147-14-8)	Listed.
4-hydroxy-4-methylpentan-2-one (CAS 123-42-2)	Listed.
Carbon black (CAS 1333-86-4)	Listed.

Titanium dioxide (CAS 13463-67-7)	Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

4-hydroxy-4-methylpentan-2-one (CAS 123-42-2)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Titanium dioxide (CAS 13463-67-7)	Listed.

Mexico regulations This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 2
Flammability: 2
Physical hazard: 0

NFPA ratings
Health: 2
Flammability: 2
Instability: 0

Disclaimer This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

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