SAFETY DATA SHEET

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In accordance with Schedule 1 of Hazardous Products Regulations (HPR) (WHMIS 2015)

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name	M-COAT D
Other Means of Identification	Mixture

Recommended use and restrictions

Recommended use	Adhesives.
Restrictions on use	For professional users only.

Initial Supplier Identifier

Company Identification	VISHAY MEASUREMENTS GROUP, INC.
Telephone	Post Office Box 27777 Raleigh, NC 27611 USA
E-Mail (competent person)	mm.us@vishaypg.com

Emergency telephone number

Emergency Phone No.	1-800-424-9300	CHEMTREC (24 hours)
Languages spoken	English	

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

In accordance with Schedule 1 of Hazardous Products Regulations (HPR) (WHMIS 2015)

Flammable Liquid - Category 2
Aspiration hazard - Category 1
Skin corrosion/irritation - Category 2
Eye Irritation - Category 2
Specific target organ toxicity — single exposure, Category 3
Specific target organ toxicity — repeated exposure, Category 1
Reproductive toxicity - Category 2
Aquatic toxicity, Chronic - Category 3

Label elements

Hazard Pictogram(s)

Signal Word(s)

DANGER

Hazard Statement(s)

Highly flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.
Suspected of damaging the unborn child.
May cause damage to organs (Central nervous system) through prolonged or repeated exposure.
Harmful to aquatic life with long lasting effects.

Precautionary Statement(s)

Avoid release to the environment.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapour.
Keep container tightly closed.

Wear protective gloves/protective clothing/eye protection/face protection.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Do NOT induce vomiting.
IF ON SKIN: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Store locked up.
Dispose of contents in accordance with local, state or national legislation.

Other hazards None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances Not applicable

Mixtures

GHS Classification

Chemical Name	CAS No.	Concentration (%W/W)	Common name(s), synonym(s) of the substance	Hazard classification
Toluene	108-88-3	30 – 60	1-Methylbenzene; Methylbenzol	Flammable Liquid - Category 2 Aspiration hazard - Category 1 Skin corrosion/irritation - Category 2 Specific target organ toxicity — single exposure, Category 3 (Narcosis) Specific target organ toxicity — repeated exposure, Category 1 (Central nervous system) Reproductive toxicity - Category 2 Aquatic toxicity, Chronic - Category 3
Titanium dioxide^	13463-67-7	10 - 30	-	Not classified as hazardous for supply.
Ethyl methyl ketone	78-93-3	7 - 13	Butanone; Methyl ethyl ketone	Flammable Liquid - Category 2 Eye Irritation - Category 2 Specific target organ toxicity — single exposure, Category 3 (Narcosis / Central nervous system)

Prescribed Concentration Ranges used for trade secret purposes (Canada Gazette, Part II, Vol. 152, No. 8)
^ See Section: 8 and 11

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Self-protection of the first aider — Do not breathe vapour. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Do not use mouth-to-mouth resuscitation.

Inhalation — IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Apply artificial respiration only if patient is not breathing or under medical supervision. Call a POISON CENTER or doctor/physician if you feel unwell. If exposed or concerned: Get medical attention/advice.

Skin Contact — IF ON SKIN: Wash with plenty of soap and water. Remove contaminated clothing and wash clothing before reuse. If skin irritation occurs, get medical

	advice/attention. If exposed or concerned: Get medical attention/advice.
Eye Contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration into the lungs. Do not give milk or alcoholic beverages. Immediately call a POISON CENTER/doctor.
Most important symptoms and effects, both acute and delayed	May be fatal if swallowed and enters airways. Causes skin irritation. Causes eye irritation. May cause drowsiness or dizziness. May cause damage to organs through prolonged or repeated exposure. Suspected of damaging the unborn child.
Indication of any immediate medical attention and special treatment needed	Treat symptomatically. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. If Gastric Lavage is performed: Endotracheal control and/or esophagoscopy is recommended. Give a slurry of activated charcoal in water to drink. (240mL Water / 30 g Activated charcoal).

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media	
Suitable Extinguishing Media	As appropriate for surrounding fire. Extinguish preferably with foam, carbon dioxide or dry chemical.
Unsuitable extinguishing Media	Do not use water jet. Direct water jet may spread the fire.
Special hazards arising from the substance or mixture	Highly flammable liquid and vapour. Combustion or thermal decomposition will evolve toxic and irritant vapours. Carbon monoxide, Carbon dioxide, Acrid smoke and Nitrogen oxides. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
Special protective equipment and precautions for fire fighters	Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Shut off leaks if without risk. Eliminate all ignition sources if safe to do so. Ensure adequate ventilation. Do not breathe vapour. Avoid contact with skin, eyes or clothing. Wear suitable respiratory protection. Use personal protective equipment as required. See Section: 8.
Environmental precautions	Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.
Methods and material for containment and cleaning up	Ensure suitable personal protection (including respiratory protection) during removal of spillages. Use non-sparking equipment when picking up flammable spill. Contain spillages. Adsorb spillages onto sand, earth or any suitable adsorbent material. Do NOT absorb in saw-dust or other combustible absorbents. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste.
Reference to other sections	See Section: 8, 13

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling	Ensure adequate ventilation. Do not breathe vapour. In case of inadequate ventilation wear respiratory protection. Use personal protective equipment as required. See Section: 8. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Use non-sparking hand tools and explosion

	proof electrical equipment.
Conditions for safe storage, including any incompatibilities	Ground/bond container and receiving equipment. Store in a cool/low-temperature, well-ventilated (dry) place. Keep container closed. Keep away from fire, sparks and heated surfaces - no smoking. Vapor space above stored liquid may be flammable/explosive unless blanketed with inert gas. Opened containers should be carefully resealed and stored in an upright position.
Storage temperature	Store at temperatures not exceeding (°C): 27
Incompatible materials	Avoid contact with: Oxidizing agents.
Specific end use(s)	See Section: 1.2

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Occupational Exposure Limits

SUBSTANCE	CAS No.	ACGIH® TLV® (ppm)		OSHA PEL (ppm)		Note
		TWA	STEL	TWA	STEL	
Toluene	108-88-3	20	-	200	300	A4
Titanium dioxide	13463-67-7	10 (mg/m³)	-	15 (mg/m³)*	-	A4
Ethyl methyl ketone	78-93-3	200	300	200	-	-

Source: ACGIH: American Conference of Governmental Industrial Hygiene. TLV: Threshold Limit Value (ACGIH) PEL (OSHA)
A4: Not Classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of the lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.
* Total Dust

Alberta: Occupational Health And Safety Code, 2009; Quebec: Health and Safety Work Act, 2016

SUBSTANCE	CAS No.	8-hour Occupational Exposure Limits			15-minute or ceiling (c) Occupational Exposure Limits		Note
		ppm	mg/m³	f/cc	STEL (ppm)	STEL (mg/m³)	
Toluene	108-88-3	50	188	-	-	-	Alberta, 1
		50	188	-	-	-	OEL
Titanium dioxide	13463-67-7	-	10*	-	-	-	OEL
Ethyl methyl ketone	78-93-3	200	590	-	300	885	Alberta
		50	150	-	100	300	OEL

Source: Alberta: Occupational Health And Safety Code, 2009
OEL: Quebec Work Health and Safety Regulations, Health and Safety Work Act, (Chapter S – 2.1, a. 223)
1: Can be readily absorbed through intact skin.
* Value is for particulate matter not containing Asbestos and <1% Crystalline Silica

British Columbia: Occupational Health and Safety Guidelines, 2015; Northwest Territories: Occupational Health And Safety Code, 2012; Yukon Territory: Health and Safety Work Act, 1986

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Toluene	108-88-3	20	-	-	-	WEL
		50	-	60	-	NW, Sk
		100	375	-	-	YK
Titanium dioxide*	13463-67-7	-	10	-	-	WEL, Total Dust
		-	10	-	20	NW
		30	10	-	20	YK, Total Dust
Ethyl methyl ketone	78-93-3	50	-	100	-	WEL
		200	-	300	-	NW
		200	590	250	740	YK

Source: WEL: Occupational Health and Safety Guidelines Part 5: Chemical Agents and Biological Agents (British Columbia)
NW: WSCC, Occupational Health And Safety Code, Northwest Territories Volume 3
Yukon Territory (YK): Occupational Health and Safety Act. O.I.C. 1986/164 Occupational Health Regulations.

Sk - Can be absorbed through skin.

Ontario: Occupational Health and Safety Act, 1990; Saskatchewan: Occupational Health and Safety Regulations, 1996.

SUBSTANCE	CAS No.	Time Weighted Average (TWA)	STEL (ppm)	Note
Toluene	108-88-3	-	20	WEL
Titanium dioxide	13463-67-7	10 (mg/m³)	-	WEL
Ethyl methyl ketone	78-93-3	200	300	WEL
		200	300	SK

Source: WEL: Occupational Health and Safety Act, R.R.O. 1990, Regulation 833, CONTROL OF EXPOSURE TO BIOLOGICAL OR CHEMICAL AGENTS (Ontario)
Saskatchewan (SK): Occupational Health and Safety Act, 1993. O-1.1 REG 1 Occupational Health and Safety Regulations, 1996.

Biological limit value

SUBSTANCE	CAS No.	Biological exposure determinant factors	Biological Exposure Indices	Sampling Time	Note
Toluene	108-88-3	Toluene: Blood	0.02 mg/L	Prior to last shift of workweek	-
		Toluene: Urine	0.03 mg/L	End of Shift	-
		o-Cresol: Urine^	0.3 mg/g Creatinine	End of Shift	1
Ethyl methyl ketone	78-93-3	Ethyl methyl ketone: Urine	2 mg/L	End of Shift	Ns

Source: 2015 ACGIH Biological Exposure Indicies (BEIs)
1: Background level
^ Hydrolysis
Ns - Nonspecific

Exposure controls

Appropriate engineering controls

Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Guarantee that the eye flushing systems and safety showers are located close to the working place.

Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Avoid contact with skin, eyes or clothing. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.

Eye/face protection

Wear protective eye glasses for protection against liquid splashes. Eye protection with side protection.

Skin protection

Hand protection: Wear impervious gloves. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Recommended: Neoprene.

Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear anti-static clothing and shoes.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment. A suitable mask with filter type A may be appropriate.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	White, Liquid
Odour	Aromatic
Odour threshold	Not established.
pH	Not established.
Melting point/freezing point	Not established.
Initial boiling point and boiling range	100 °C
Flash point	-1 °C [Closed cup]
Evaporation rate (Water = 1)	1.9 (BuAc=1)
Flammability (solid, gas)	Not applicable: Liquid
Upper/lower flammability or explosive limits	Flammable Limits (Lower) (%v/v): 1.6 Flammable Limits (Upper) (%v/v): 7.0
Vapour pressure	0.49 mmHg @ 20°C
Vapour density	3.8 (Air = 1)
Relative density	< 1 (Water = 1)
Solubility(ies)	Soluble in water.
Partition coefficient: n-octanol/water	Not established.
Auto-ignition temperature	Not established.
Decomposition Temperature	Not established.
Viscosity	Not established.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

Other information Volatile Organic Compound Content: 650 g/l

SECTION 10: STABILITY AND REACTIVITY

Reactivity Stable under normal conditions.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions Highly flammable liquid and vapour. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.

Conditions to avoid Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Incompatible materials Avoid contact with: Oxidizing agents.

Hazardous decomposition product(s) May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, Acrid smoke and Nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity - Ingestion Based upon the available data, the classification criteria are not met.
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.

Acute toxicity - Inhalation Based upon the available data, the classification criteria are not met.
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >20.0 mg/l.

Acute toxicity - Skin Contact Based upon the available data, the classification criteria are not met.
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.

Skin corrosion/irritation Skin corrosion/irritation - Category 2: Causes skin irritation.

Toluene
Skin corrosion/irritation - Category 2
Irritating to skin. (rabbit) (EU Method B.4)

Serious eye damage/irritation Eye Irritation - Category 2: Causes serious eye irritation.

Ethyl methyl ketone
Eye Irritation - Category 2
Irritating to eyes. (rabbit) (OECD 405)

Respiratory or skin sensitization Based upon the available data, the classification criteria are not met.

Germ cell mutagenicity Based upon the available data, the classification criteria are not met.

Carcinogenicity Based upon the available data, the classification criteria are not met.

Titanium dioxide	Titanium dioxide is listed by IARC as a Group 2B substance (possibly carcinogenic to humans), however, IARC mongraphs Vol. 93 states that exposure levels are assumed to be lower in the user industries, with the possible exception of workers who handle large quantities of titanium dioxide. Titanium dioxide in this mixture is mostly in a bound form. Therefore no significant exposure to titanium dioxide is thought to occur during the use of this product.
Reproductive toxicity	Reproductive toxicity - Category 2: Suspected of damaging the unborn child.
Toluene	Reproductive toxicity - Category 2 NOAEC 600 ppm (Ono A et al, 1996)
STOT - single exposure	Specific target organ toxicity — single exposure, Category 3: May cause drowsiness or dizziness.
Toluene	Specific target organ toxicity — single exposure, Category 3 Narcosis (rat) (OECD 403)
Ethyl methyl ketone	Specific target organ toxicity — single exposure - Category 3 Harmonised Classification Rats at all dose levels: gait and/or posture abnormalities. Higher dose groups some rats were comatose or prostrate within a few hours of dosing, with some animals being unconscious for 24 hours. (OECD 423)
STOT - repeated exposure	Specific target organ toxicity — repeated exposure, Category 1: Causes damage to organs.
Toluene	Specific target organ toxicity — repeated exposure, Category 2 NOAEL 625 mg/kg bw/day (EU Method B.26)
Aspiration hazard	Aspiration hazard - Category 1: May be fatal if swallowed and enters airways.
Toluene	Aspiration hazard - Category 1 Kinematic Viscosity 0.59 mm^2/S
Other information	None

SECTION 12: ECOLOGICAL INFORMATION

Toxicity	Aquatic toxicity, Chronic - Category 3: Harmful to aquatic life with long lasting effects. Estimated Mixture LC50 >10 $\leq$ 100 mg/l (Fish)
Toluene	Aquatic toxicity, Chronic - Category 3 Acute: LC50 (fish) mg/l 5.5 (96 hour) (Moles et al., 1981) Chronic: NOEC (Fish) mg/l 1.4 (40 Day) (Moles et al., 1981)
Persistence and degradability	No data for the mixture as a whole.
Bioaccumulative potential	The product has no potential for bioaccumulation.
Mobility in soil	The substance is predicted to have high mobility in soil. (Soluble in water.)
Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Do not release undiluted and unneutralised to the sewer. Dispose of this material and its container as hazardous waste. Containers of this material may be hazardous when empty since they retain product residue.

SECTION 14: TRANSPORT INFORMATION

		ADR/RID	IMDG	IATA/ICAO
14.1	**UN number**	1993	1993	1993
14.2	**UN proper shipping name**	FLAMMABLE LIQUID, N.O.S (Toluene and Ethyl methyl ketone)	FLAMMABLE LIQUID, N.O.S (Toluene and Ethyl methyl ketone)	FLAMMABLE LIQUID, N.O.S (Toluene and Ethyl methyl ketone)
14.3	**Transport hazard class(es)**	3	3	3
14.4	**Packing group**	II	II	II
14.5	**Environmental hazards**	Environmentally hazardous substance	Not classified as a Marine Pollutant./ Environmentally	Environmentally hazardous substance

hazardous substance

14.6 Special precautions for user See Section: 2

SECTION 15: REGULATORY INFORMATION

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

National regulations

CEPA, Domestic Substances List	Toluene: Yes Titanium dioxide: Yes Ethyl methyl ketone: Yes
CEPA, Priority Substances List	Toluene: PSL 1
CEPA, List of Toxic Substances (Schedule 1)	Toluene: VOC - Item 65 Ethyl methyl ketone: VOC - Item 65
CEPA, National Pollutant Release Inventory	Toluene: Threshold Category: Part 1A, Mass Threshold: 10 tonnes MPO Concentration threshold: 1%; Threshold Category: Part 5, Mass Threshold: 1 tonnes of 10 tonnes Total VOC air release, Concentration threshold: N/A Ethyl methyl ketone: Threshold Category: Part 1A, Mass Threshold: 10 tonnes Concentration threshold: 1%; Threshold Category: Part 5, Mass Threshold: 1 tonnes of 10 tonnes Total VOC air release, Concentration threshold: N/A
CEPA, Environmental Emergency Regulations	Toluene: Part 1: Substances Likely to Explode. Concentration: ≥ 1% w/w. Volume (Minimum): 2500 tonnes (metric).

Non-Regional

IARC Monographs, List of Classifications	Toluene: Yes - Group 3 Titanium dioxide: Yes - Group 2B.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Not applicable – V1.0

Date of First Issue: **04 April 2018**
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References:
Existing Safety Data Sheet (SDS).
EU: Harmonised Classification(s) for Toluene (CAS No. 108-88-3) and Ethyl methyl ketone (CAS No. 78-93-3). Existing ECHA registration(s) for Toluene (CAS No. 108-88-3), Titanium dioxide (CAS No. 13463-67-7) Ethyl methyl ketone (CAS No. 78-93-3).

Literature References:

1. Ono A, Sekita K, Ogawa Y, Hirose A, Suzuki S, Saito M, Naito K, Kaneko T, Furuya T, Kawashima K, Yasuhara K, Matsumoto K, Tanaka S, Inoue T and Kurokawa Y, 1996, Reproductive and developmental toxicity studies of toluene II. Effects of inhalation exposure on fertility in rats, Journal of Environmental Pathology Toxicology and Oncology 15, 9-20
2. Moles A, Bates S, Rice SD, Korn S. 1981. Reduced growth of Coho salmon fry exposed to two petroleum components, Toluene and naphthalene in fresh water. Transactions A. Fish. Soc. 110, 430-436.

LEGEND

LTEL: Long Term Exposure Limit
STEL: Short Term Exposure Limit
DNEL: Derived No Effect Level
PNEC: Predicted No Effect Concentration
PBT: PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
IARC: International Agency for Research on Cancer
NTP: National Toxicology Program
OSHA = Occupational Safety and Health Administration
NIOSHTIC: National Institute for Occupational Safety and Health Technical Information Center
ACGIH: American conference of Governmental Industrial Hygiene
BEI: Biological Exposure Indices (ACGIH)
TLV: Threshold Limit Value (ACGIH)
TWA: Time Weighted Average
VOC: Volatile Organic Compound
EU: European Union
CEPA (Canadian Environmental Protection Act)

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