SAFETY DATA SHEET

Version: 4.1
Date of Issue: 03-Mar-2021
Date of First Issue: 05-Mar-2015

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 1: IDENTIFICATION

Product identifier used on the label M-COAT D

Other means of identification
Chemical Name Mixture
CAS No. Mixture
EINECS No. Mixture

Recommended use of the chemical and restrictions on use
Recommended use: Coating
Restrictions on use: For professional users only.

Details of the supplier of the safety data sheet
Supplier: VISHAY MEASUREMENTS GROUP, INC.
Address of Supplier: Post Office Box 27777
Raleigh, NC 27611
USA
Telephone: +1 919-365-3800
Fax: +1 919-365-3945
E-Mail (competent person): mm.us@vishaypg.com

Emergency telephone number 1-800-424-9300 CHEMTREC (24 hours)

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200
Physical hazards Flammable Liquid, Category 2
Health hazards: Aspiration hazard, Category 1
Skin corrosion/irritation, Category 2
Eye Irritation, Category 2
Specific target organ toxicity — single exposure, Category 3
Reproductive toxicity, Category 2
Specific target organ toxicity — repeated exposure, Category 2
Environmental hazards: Not classified

Hazard Symbol

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.

Precautionary Statement(s)
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.

Percent of the mixture consists of ingredient(s) of unknown acute toxicity: 0%

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances Not applicable

Mixtures Substances in preparations / mixtures

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Toluene	< 50	108-88-3	203-625-9	Flammable Liquid, Category 2 Aspiration hazard, Category 1 Skin corrosion/irritation, Category 2 Specific target organ toxicity — single exposure, Category 3 Reproductive toxicity, Category 2 Specific target organ toxicity — repeated exposure, Category 2 Hazardous to the aquatic environment, acute, Category 2 Hazardous to the aquatic environment, Chronic, Category 3
Acrylic ester resin	25 - 30	-	-	Not classified
Titanium dioxide	15 - 20	13463-67-7	236-675-5	Not classified
Ethyl methyl ketone	< 20	78-93-3	201-159-0	Flammable Liquid, Category 2 Eye Irritation, Category 2 Specific target organ toxicity — single exposure, Category 3

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	Causes skin irritation. Causes eye irritation. May be fatal if swallowed and enters airways. Suspected of damaging the unborn child. May cause drowsiness or dizziness. May cause damage to organs through prolonged or repeated exposure.
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
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.

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 (℃): 27
Incompatible materials	Avoid contact with: Oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Toluene	108-88-3	100	375	150*	560*	NIOSH
		200	-	300	-	OSHA
		20	-	-	-	ACGIH, A4
Titanium dioxide	13463-67-7	-	10	-	-	OSHA, Total dust
		-	10	-		ACGIH, A4
Ethyl methyl ketone	78-93-3	200	590	300*	885*	NIOSH
		200	590	-	-	OSHA
		200	-	300	-	ACGIH

Note: OSHA PELs 1910.1000 TABLE Z-1, Z-2 / NIOSH RELs / ACGIH TLVs
* 15 minutes average value
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.

The other components listed in Section 3 do not have occupational exposure limits.

Biological Exposure Indices

SUBSTANCE	CAS No.	Determinant	Biological Exposure Indices	Sampling Time	Note
Toluene	108-88-3	Toluene in blood	0.02 mg/l	Prior to last shift of workweek	-
		Toluene in urine	0.03 mg/l	End of shift	-
		o-Cresol in urine with hydrolosis	0.3 mg/g creatinine	End of shift	B
Ethyl methyl ketone	78-93-3	Ethyl methyl ketone in urine	2 mg/L	End of shift	Ns

Source: 2015 ACGIH Biological Exposure Indicies (BEIs)
B – Background
Ns - Nonspecific

The other components listed in Section 3 do not have biological exposure indicies.

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. Wear 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
Odor	Aromatic
Odor Threshold	Not established.
pH	Not established.
Melting Point/Freezing Point	Not established.
Initial boiling point and boiling range	100 ℃
Flash Point	-1 ℃ [Closed cup]
Evaporation rate (Butyl acetate = 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℃
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.

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 (Substances in preparations / mixtures)

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

Acute toxicity - Inhalation Based on available data, the classification criteria are not met.

	Acute Toxicity Estimate Mixture Calculation: > 20 mg/l
Acute toxicity - Skin Contact	Based on available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: > 2000 mg/kg bw/day
Skin corrosion/irritation	Skin corrosion/irritation, Category 2: Causes skin irritation.
Serious eye damage/irritation	Eye Irritation, Category 2: Causes serious eye irritation.
Respiratory or skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Reproductive toxicity, Category 2: Suspected of damaging the unborn child.
STOT - single exposure	Specific target organ toxicity — single exposure, Category 3: May cause drowsiness or dizziness.
STOT - repeated exposure	Specific target organ toxicity — repeated exposure, Category 2: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	Aspiration hazard, Category 1: May be fatal if swallowed and enters airways.

Information on likely routes of exposure

Inhalation	Possible – accidental exposure
Ingestion	Unlikely – accidental exposure
Skin Contact	Possible – accidental exposure
Eye Contact	Unlikely – accidental exposure

Early onset symptoms related to exposure

Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways.

Delayed health effects from exposure

Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure. (Affected organs: Central nervous system).

Other information

NTP Report on Carcinogens	Not Listed
IARC Monographs	Toluene – Listed; Group 3 Titanium dioxide – Listed; Group 2B
OSHA Designated Carcinogen	Not Listed

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	Giftig für Wasserorganismen, mit langfristiger Wirkung.
Toluene	Hazardous to the aquatic environment, acute, Category 2 Hazardous to the aquatic environment, 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.
Toluene	Readily biodegradable. Water % Degradation: 81% (5 days) (Bridie et al. 1979)
Ethyl methyl ketone	Readily biodegradable. Water % Degradation: 98% (28 days) (Unnamed publication1998)
Bioaccumulative potential	No data for the mixture as a whole.
Toluene	Low bioaccumulation potential. BCF: 90 (Freitag et al. 1985)
Ethyl methyl ketone	Low bioaccumulation potential.
Mobility in soil	No data for the mixture as a whole.
Toluene	The substance has moderate mobility in soil. Log Koc: 2.31 (Sabljic A et al. 1995)
Ethyl methyl ketone	The substance is predicted to have high mobility in soil. EU ECHA Registration Endpoint summary
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

Regulation Name	**ADR/RID**	**IMDG**	**IATA**
UN number	1993	1993	1993
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)
Transport hazard class(es)	3	3	3
Packing group	III	III	III
Environmental hazards	Not classified.	Not classified.	Not classified.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.	Not classified as a Marine Pollutant.	Not classified.
Special precautions for user	See Section: 2		

SECTION 15: REGULATORY INFORMATION

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

US Federal Regulations

TSCA (Toxic Substance Control Act)	Toluene: Subject to 25,000 lb reporting threshold Titanium dioxide: Subject to 25,000 lb reporting threshold Ethyl methyl ketone: Subject to 25,000 lb reporting threshold
EPCRA/SARA Section 302 Extremely Hazardous Substances	Not Listed
EPCRA Section 313 Toxics Release Inventory (TRI) Program	Toluene: De Minimis limit: 1%
NIOSH Occupational Carcinogen List	Titanium dioxide: Listed
OSHA List of highly hazardous chemicals, toxics and reactives	Not Listed
NTP Report on Carcinogens (RoC) List	Not Listed
Poison Prevention Packaging Act	Toluene: Substance requiring special packaging - Solvents for paint or other similar surface-coating material

US State Regulations

California State, Proposition 65 List	Toluene: Safe harbor level - MADL: 7000 ug/day Titanium dioxide: Listed; airborne, unbound particles of respirable size
California State, Safer Consumer Products Regulations	Toluene: Initial Candidate Chemicals List Titanium dioxide: Candidate Chemicals List Ethyl methyl ketone: Candidate Chemicals List
Maine State, Toxic Chemicals in Children's Products Act	Toluene: COC list. CHC list
New Jersey State Worker and Community RTK Act	Toluene: RTKHSL. SHHSL Titanium dioxide: RTKHSL Ethyl methyl ketone: RTKHSL. SHHSL
Pennsylvania State, Worker and Community RTK Act	Toluene: Hazardous Substance List. Environmental Hazard List Titanium dioxide: Hazardous Substance List Ethyl methyl ketone: Hazardous Substance List. Environmental Hazard List
Rhode Island State, Hazardous Substances RTK Act	Toluene: Hazardous Substance List Titanium dioxide: Hazardous Substance List Ethyl methyl ketone: Hazardous Substance List

Non-Regional

IARC Monographs, List of Classificationsonal	Toluene: Group 3 Titanium dioxide: Group 2B

SECTION 16: OTHER INFORMATION

The following sections have updates indicated by-

Version 4.1
Revision Date 03-Mar-2021
Date of First Issue 05-Mar-2015

References:

Existing Safety Data Sheet (SDS). EU Data: Existing ECHA registration(s) for and Harmonised Classification(s) for Toluene (CAS No. 108-88-3) and Ethyl methyl ketone (CAS No. 78-93-3). Existing ECHA registration(s) for Titanium Dioxide (CAS No. 13463-67-7).

Literature References

1. Bridie, Wolff and Winter. 1979. BOD and COD of some petrochemicals. Water Research 13, 627-630.
2. Freitag D, Ballhorn L, Geyer H, Korte F. 1985. Environmental Hazard profile of organic chemicals. Chemosphere 14 (10). 1589-1616.
3. Sabljic A, Gusteb H, Verhaar H, Hermens J. 1995. QSAR modelling of soil sorption. Improvements and systemsatics of log Koc vs. log Kow correlations. Chemosphere. 31: 4489-451.

GHS Classification of the substance or mixture	Classification Procedure
Flammable Liquid, Category 2	Flash Point [Closed cup] Test Result/ Boiling Point (℃)
Aspiration hazard, Category 1	Estimated Viscosity
Skin corrosion/irritation, Category 2	Threshold Calculation
Eye Irritation, Category 2	Threshold Calculation
Specific target organ toxicity — single exposure, Category 3	Threshold Calculation
Reproductive toxicity, Category 2	Threshold Calculation
Specific target organ toxicity — repeated exposure, Category 2	Threshold Calculation

LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists
BEI: Biological Exposure Indices (ACGIH)
IARC: International Agency for Research on Cancer
Irr: Irritation
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: The Occupational Safety & Health Administration
PBT: Persistent, Bioaccumulative and Toxic
PEL: Permissible exposure limit
REL: Recommended exposure limit
SCL: Specific Concentration Limit
Skin": Risk of overexposure via dermal contact
STEL: Short Term Exposure Limit
TLV: Threshold Limit value
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
URT: Upper respiratory tract
vPvB: very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Precision Group gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Precision Group accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “VPG”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

The product specifications do not expand or otherwise modify VPG’s terms and conditions of purchase, including but not limited to, the warranty expressed therein.

VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG’s knowledge of typical requirements that are often placed on VPG products. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at vpgsensors.com.

No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of VPG.

The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling VPG products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify VPG for any damages arising or resulting from such use or sale. Please contact authorized VPG personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.