

SAFETY DATA SHEET

Version: 3.1
Date of Issue: 18-May-2021
Date of First Issue: 11-May-2012

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ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 1: IDENTIFICATION

Product identifier used on the label	M-Coat B (Control # 1072 and Higher)	
Other means of identification		
Chemical Name	Mixture	
CAS No.	Mixture	
EINECS No.	Mixture	
Recommended use of the chemical and restrictions on use		
Recommended use	PC9a Coatings and paints, thinners, paint removers	
Restrictions on use	Anything other than the above.	
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@vpgsensors.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

Eye Irritation, Category 2

Specific target organ toxicity — single exposure, Category 3

Carcinogen, Category 1

Environmental hazards

Not Classified

Hazard Symbol



Signal Word(s)

Danger

Hazard Statement(s)

Highly flammable liquid and vapour.

Causes serious eye irritation.

May cause drowsiness or dizziness.

May cause cancer.

Precautionary Statement(s)

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

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

Keep container tightly closed.

Wash hands and exposed skin thoroughly after handling.

Avoid breathing vapours.

Wear protective gloves/protective clothing/eye protection/face protection.

SAFETY DATA SHEET

Version: 3.1
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ACCORDING TO OSHA HCS (29 CFR 1910.1200)

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.
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER/doctor if you feel unwell.
Store locked up.
Dispose of contents in accordance with local, state or national legislation.

Other hazards

Repeated exposure may cause skin dryness or cracking.
Contains: Formaldehyde. May produce an allergic reaction.

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
Ethyl methyl ketone	< 74	78-93-3	201-159-0	Flammable Liquid, Category 2 Eye Irritation, Category 2 Specific target organ toxicity — single exposure, Category 3
Formaldehyde	< 0.13	50-00-0	200-001-8	Acute toxicity, Category 3 Acute toxicity, Category 3 Skin corrosion/irritation, Category 1 Skin Sensitisation, Category 1 Eye damage, Category 1 Acute toxicity, Category 3 Germ cell mutagenicity, Category 2 Carcinogen, Category 1 Hazardous to the aquatic environment, Acute, Category 2 Specific Concentration Limit: Skin Sensitisation, Category 1: $C \geq 0.2 \%$ Skin corrosion/irritation, Category 1: $C \geq 25 \%$ Skin corrosion/irritation, Category 2: $5 \% \leq C < 25 \%$ Eye Irritation, Category 2: $5 \% \leq C < 25 \%$ Specific target organ toxicity — single exposure, Category 3: $C \geq 5 \%$

SECTION 4: FIRST AID MEASURES



Description of first aid measures Self-protection of the first aider

Inhalation

Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Do not breathe vapour. Avoid all contact. Contaminated clothing should be laundered before reuse.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.

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Skin Contact	IF ON SKIN: Remove contaminated clothing and wash all affected areas with plenty of water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.
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. IF exposed or concerned: Get medical advice/attention.
Ingestion	IF SWALLOWED: Rinse mouth. Make victim drink plenty of water. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless instructed to do so by medical personnel. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.
Most important symptoms and effects, both acute and delayed	Causes serious eye irritation. May cause drowsiness or dizziness. May cause cancer. Repeated exposure may cause skin dryness or cracking. May produce an allergic reaction in persons already sensitised.
Indication of any immediate medical attention and special treatment needed	Treat symptomatically.
Notes to a physician:	IF SWALLOWED: Material may be aspirated into the lungs and cause chemical pneumonitis

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media Suitable Extinguishing Media Unsuitable extinguishing Media Special hazards arising from the substance or mixture	Extinguish with carbon dioxide, dry chemical, foam or waterspray. Do not use water jet. May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide. Prevent liquid entering sewers, basements and workpits; vapour may create explosive atmosphere. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Prevent liquid entering sewers, basements and workpits; vapour may create explosive atmosphere. May form explosive peroxides.
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. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Caution - spillages may be slippery. Ensure adequate ventilation. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use personal protective equipment as required. See Section: 8. Do not breathe vapour.
Methods and material for containment and cleaning up	Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent material. 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 operatives are trained to minimise exposures. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Ensure adequate ventilation. Do not breathe vapour. In case of inadequate ventilation wear respiratory protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. May form explosive mixture with air particularly in enclosed spaces. Take precautionary measures against static discharges. Wear protective gloves/protective clothing/eye protection/face protection. Avoid all contact. Do not eat, drink or smoke when using this product.
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SAFETY DATA SHEET

Version: 3.1
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Conditions for safe storage, including any incompatibilities

Storage temperature
 Incompatible materials

Ground/bond container and receiving equipment. Keep only in original container. Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. May form explosive mixture with air particularly in enclosed spaces. Keep away from direct sunlight.
 Ambient.
 Keep away from: Flammable liquid, Oxidizing agents, Corrosive Substances, Alcohols.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
Methyl ethyl ketone	78-93-3	200	590	300*	885*	NIOSH
		200	590	-	-	OSHA
		200	-	300	-	ACGIH
Formaldehyde	50-00-0	0.016		0.1 [^]		NIOSH, Ca
		0.75		2		OSHA
		-		0.3 [^]		ACGIH, SEN, A2

Note: OSHA PELs 1910.1000 TABLE Z-1; OSHA PELs 1910.1048 / NIOSH RELs / ACGIH TLVs

*NIOSH 15 minute average values

[^] Ceiling limit value (15 min)

SEN: Confirmed potential for worker sensitization as a result of dermal contact and/or inhalation exposure, based on weight of scientific evidence.

A2: Suspected Human Carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen; OR, the agent is carcinogenic in experimental animals at dose(s) , by route(s) of exposure, at site(s), of histological type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans.

Ca = Potential occupational carcinogens

Biological Exposure Indices

SUBSTANCE	CAS No.	Determinant	Biological Exposure Indices	Sampling Time	Note
Ethyl methyl ketone	78-93-3	Ethyl methyl ketone in urine	2 mg/L	End of shift	Ns

Source: 2015 ACGIH Biological Exposure Indices (BEIs)

Ns - Nonspecific

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

Appropriate engineering controls

Ensure operatives are trained to minimise exposures. Ensure adequate ventilation. Atmospheric levels should be controlled in compliance with the occupational exposure limit.

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

General hygiene measures for the handling of chemicals are applicable. Keep good industrial hygiene. Avoid all contact. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Do not eat, drink or smoke at the work place. IF exposed: Flush with fresh water if contact with skin or eyes.

Eye/face protection



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

SAFETY DATA SHEET

Version: 3.1
Date of Issue: 18-May-2021
Date of First Issue: 11-May-2012

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Skin protection



Hand protection:

Wear impervious gloves. Protective index 6, corresponding > 480 minutes of permeation time. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Suitable materials: Butyl rubber (Minimum thickness: 0.7mm), Nitrile rubber (Minimum thickness: 0.4mm)

Body protection:

Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

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	Physico-chemical properties of substance Methyl ethyl ketone
Appearance	Viscous tan Coloured liquid
Odor	Ketone Odour
Odor Threshold	Not available.
pH	Not established.
Melting Point/Freezing Point	-86°C
Initial boiling point and boiling range	82.3°C (Mixture)
Flash Point	-9 °C [Closed cup]
Evaporation rate (Butyl acetate = 1)	1 (BuAc = 1)
Flammability (solid, gas)	Not applicable - liquid mixture
Upper/lower flammability or explosive limits	LEL: 2.0 UEL: 10.0
Vapour pressure	12.6 kPa at 25°C
Vapour density	>1 (Air = 1)
Relative density	0.81 g/cm ³ (H ₂ O = 1)
Solubility(ies)	>10% (Water)
Partition coefficient: n-octanol/water	0.3 log Pow (40 °C)
Auto-ignition temperature	404 °C
Decomposition Temperature	Not available.
Viscosity	2.038 mPa s (Dynamic viscosity) 25 °C
Other information	Volatile Organic Compound Content: 675 g/liter

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. The vapour may be invisible, heavier than air and spread along ground. May form explosive mixture with air particularly in enclosed spaces.
Conditions to avoid	Keep away from heat, sources of ignition and direct sunlight.
Incompatible materials	Flammable liquid, Oxidizing agents, Corrosive Substances, Alcohols, Strong Acids and Alkalis.
Hazardous decomposition product(s)	May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide.

SAFETY DATA SHEET



Version: 3.1
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www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects (Substances in preparations / mixtures)

All test data taken from existing ECHA registrations for the substances mentioned.

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.

Formaldehyde:

Harmonised Classification

Test Result: LD50 (oral,rat) mg/kg: 330 – 650 (95% CL) (OECD 401)

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.

Formaldehyde:

Harmonised Classification

Test Result: LC50 (Inhalation, (rat)) ppm: <463 (OECD 403)

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.

Formaldehyde:

Harmonised Classification

Test Result: LD50 (skin,rabbit) mg/kg: 270 (Bandman A.L. et al, 1989)

Skin corrosion/irritation

Repeated exposure may cause skin dryness or cracking.

Ethyl methyl ketone:

Prolonged skin contact will result in defatting of the skin, leading to irritation, and in some cases, dermatitis. (Smith R & Mayers MR, 1944)

Formaldehyde:

Test Result: Corrosive (OECD 404)

Serious eye damage/irritation

Eye Irritation, Category 2; Causes serious eye irritation.

Ethyl methyl ketone:

Test Result: Irritating to eyes. (OECD 405)

Respiratory or skin sensitization

May produce an allergic reaction in persons already sensitised.

Formaldehyde:

Test Result: Sensitizing (OECD 429)

Germ cell mutagenicity

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

Formaldehyde:

Test Result: Mutagenic (*in vitro DNA damage and/or repair study*) (Rosado, I.V. et al, 2011)

Carcinogenicity

Carcinogen, Category 1; May cause cancer.

Formaldehyde:

Test Result: Local effects, Stomach (rat), Chronic oral exposure. NOAEC 10 mg/kg bw/day (Tobe M et al, 1989)

Reproductive toxicity

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

STOT - single exposure

Specific target organ toxicity — single exposure, Category 3; May cause drowsiness and dizziness.

Ethyl methyl ketone:

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

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

Aspiration hazard

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

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 serious eye irritation. May cause drowsiness or dizziness.

Delayed health effects from exposure

May cause cancer. Repeated exposure may cause skin dryness or cracking. May produce an allergic reaction in persons already sensitised.

Other information

NTP Report on Carcinogens

Formaldehyde – Listed; Known To Be Human Carcinogens

IARC Monographs

Formaldehyde – Listed; Group 1

OSHA Designated Carcinogen

Formaldehyde – Listed; known carcinogens or potential carcinogens

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www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	Based upon the available data, the classification criteria are not met. Estimated Mixture LC50 >100 mg/l (Fish)
Persistence and degradability	No data for the mixture as a whole. Readily biodegradable.
Butanone	Water % Degradation: 98% (28 days) (Unnamed publication, 1998)
Formaldehyde	Readily biodegradable. Water % Degradation: 100% (4 days) (Eiroa M et al. 2006)
Bioaccumulative potential	No data for the mixture as a whole.
Butanone	Low bioaccumulation potential.
Formaldehyde	Low bioaccumulation potential. BCF: < 1 (Jung et al. 2001)
Mobility in soil	No data for the mixture as a whole.
Butanone	The substance is predicted to have high mobility in soil. EU ECHA Registration Endpoint summary
Formaldehyde	The substance is predicted to have high mobility in soil. Log Koc: 1.202 (BASF SE, 2008)
Other adverse effects	No data for the mixture as a whole.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Dispose of this material and its container as hazardous waste. Send after pre-treatment to a appropriate hazardous waste incinerator facility according to legislation.
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SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	IATA
UN number	UN 1193	UN 1193	UN 1193
UN proper shipping name	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	ETHYL METHYL KETONE (METHYL ETHYL KETONE)
Transport hazard class(es)	3	3	3
Packing group	II	II	II
Environmental hazards	Not classified	Not classified as a Marine Pollutant.	Not classified
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable		
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)	Ethyl methyl ketone: Subject to 25,000 lb reporting threshold Formaldehyde: Subject to 25,000 lb reporting threshold Formaldehyde: RQ = 100 lbs; TPQ = 500 lbs
EPCRA/SARA Section 302 Extremely Hazardous Substances	
EPCRA Section 313 Toxics Release Inventory (TRI) Program	Formaldehyde: De Minimis limit: 0.1%
NIOSH Occupational Carcinogen List	Formaldehyde:
OSHA List of highly hazardous chemicals, toxics and reactives	Formaldehyde: TQ = 1000 lbs
NTP Report on Carcinogens (RoC) List	Formaldehyde: Known to be a human carcinogen
Poison Prevention Packaging Act	Not Listed
US State Regulations	
California State, Proposition 65 List	Formaldehyde: Safe harbor level - NSRL: 40 ug/day

SAFETY DATA SHEET



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www.vishaypg.com

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California State, Safer Consumer Products Regulations	Ethyl methyl ketone: Candidate Chemicals List Formaldehyde: Initial Candidate Chemicals List
Maine State, Toxic Chemicals in Children's Products Act	Formaldehyde: COC list. PC list - Priority status: Requires manufacturers using formaldehyde in certain children's products to file a report with the Maine Department of Environmental Protection
New Jersey State Worker and Community RTK Act	Ethyl methyl ketone: RTKHSL. SHHSL Formaldehyde: RTKHSL. SHHSL
Pennsylvania State, Worker and Community RTK Act	Ethyl methyl ketone: Hazardous Substance List. Environmental Hazard List Formaldehyde: Hazardous Substance List. Special Hazardous Substance List. Environmental Hazard List
Rhode Island State, Hazardous Substances RTK Act	Ethyl methyl ketone: Hazardous Substance List Formaldehyde: Hazardous Substance List
Non-Regional IARC Monographs, List of Classifications	Formaldehyde: Group 1

SECTION 16: OTHER INFORMATION

The following sections have updates indicated by

Version 3.1
Revision Date 18-May-2021
Date of First Issue 11-May-2017

References:

Existing Safety Data Sheet (SDS). EU Data: Existing ECHA registration(s) for and Harmonised Classification(s) for Ethyl methyl ketone (CAS No. 78-93-3) and Formaldehyde (CAS No. 50-00-0).

Literature References:

- Smith R & Mayers MR, 1944, Study of poisoning and fire hazards of butanone and acetone, Industrial Hygiene: 23, 174-176
- "Vrednie chemichescie veshstva, galogen I kislород sodergashie organicheskie soedinenia". (Hazardous substances. Galogen and oxygen containing substances), Bandman A.L. et al., Chimia, 1994. -,336,1984
- Rosado, I.V. et al, 2011, Formaldehyde catabolism is essential in cells deficient for the Fanconi anemia DNA repair pathway, Nature Struc. & Mol. Bio. 18 (12): 1432-1434
- Eiroa M, Vilar A, Kennes C, Veiga MC. 2006. Formaldehyde biodegradation in the presence of methanol under denitrifying conditions. J. Chem. Technol. Biotechnol. 81, 312-317.
- Jung SH, Kim JW, Jeon IG, Lee YG. 2001. Formaldehyde residues in formalin-treated olive flounder (Paralichthys olivaceus), black rockfish (Sebastes schlegelii), and seawater. Aquaculture 194, 253-262
- Tobe M, Naito K, Kurokawa Y, 1989, Chronic toxicity study on formaldehyde administered orally to rats, Toxicology 56: 79-86
- BASF SE. 2008. Data assessment, 15 Jan 2008.

GHS Classification of the substance or mixture	Classification Procedure
Flammable Liquid, Category 2	Flash Point (°C) [Closed cup] / Boiling Point (°C) Test Result
Eye Irritation, Category 2	Threshold Calculation
Specific target organ toxicity — single exposure, Category 3	Threshold Calculation
Carcinogen, Category 1	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

REL: Recommended exposure limit
SCL: Specific Concentration Limit
Skin²: 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

SAFETY DATA SHEET



Version: 3.1
Date of Issue: 18-May-2021
Date of First Issue: 11-May-2012

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

PEL: Permissible exposure limit

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.

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