

SAFETY DATA SHEET

Revision: 2.0 Date: 31 March 2020



ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 2015/830

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

- 1.1 Product identifier**
Product Name M-Flux AR-2
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
Identified Use(s) Soldering Flux. Welding and soldering products.
Uses Advised Against Anything other than the above.
- 1.3 Details of the supplier of the safety data sheet**
Company Identification VISHAY MEASUREMENTS GROUP UK LTD
Stroudley Road
Basingstoke
Hampshire
RG24 8FW
United Kingdom
Telephone +44 (0) 1256 462131
Fax +44 (0) 1256 471441
E-Mail (competent person) mm.uk@vishaypg.com
- 1.4 Emergency telephone number**
Emergency Phone No. (00-1) 703-527-3887 CHEMTREC (24 hours)
Languages spoken All official European languages.

SECTION 2: HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture**
- 2.1.1 Regulation (EC) No. 1272/2008 (CLP)**
Flam. Liq. 2; H225
Eye Irrit. 2; H319
STOT SE 3; H336
- 2.2 Label elements**
Product Name M-Flux AR-2
Contains: Propan-2-ol
- Hazard Pictogram(s)
- 
- Signal Word(s) DANGER
- Hazard Statement(s)
H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.
- Precautionary Statement(s)
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261: Avoid breathing mist/vapours/spray.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P403+P235: Store in a well-ventilated place. Keep cool.

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2.3 Other hazards

Can form explosive mixture with air.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances Not applicable

3.2 Mixtures

EC Classification Regulation (EC) No. 1272/2008 (CLP)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard Statement(s)
Propan-2-ol Synonym(s): Isopropyl Alcohol; Isopropanol	60 - 80	67-63-0	200-661-7	Not yet assigned in the supply chain	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336
benzyl alcohol	<10	100-51-6	202-859-9	Not yet assigned in the supply chain	Acute Tox. 4; H302 Acute Tox. 4; H332 Eye Irrit. 2; H315

For full text of H/P Statements see section 16.

SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Self-protection of the first aider

No action should be taken involving personal risk. Wear appropriate personal protective equipment, avoid direct contact. Avoid contact with skin and eyes. Avoid breathing vapours. Take off immediately all contaminated clothing and wash it before reuse.

Inhalation

IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Apply artificial respiration if breathing has ceased or shows signs of failing. If unconscious, place in recovery position and get medical attention immediately. Call a poison control center or doctor for further treatment advice.

Skin Contact

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and water. If irritation (redness, rash, blistering) develops, get medical 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 irritation develops and persists, get medical attention.

Ingestion

IF SWALLOWED: rinse mouth. Do NOT induce vomiting. If vomiting occurs turn patient on side. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Obtain medical attention. Call a poison control center or doctor for further treatment advice.

4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye irritation. May cause drowsiness or dizziness.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing Media

As appropriate for surrounding fire. In case of fire use water spray or fog, alcohol resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing Media

Do not use water jet. Direct water jet may spread the fire.

5.2 Special hazards arising from the substance or mixture

Highly flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. In confined spaces, sewers, etc., the vapours

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5.3 Advice for fire-fighters

may collect to form explosive mixtures with air. When heated to soldering temperatures, the solvents are evaporated and rosin may be thermally degraded. Decomposition products: Carbon monoxide, Carbon dioxide, aliphatic aldehydes, aromatic aldehydes, acids and terpenes.

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

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Contaminated clothing should be laundered before reuse. Ensure adequate ventilation. Avoid breathing vapours. Avoid contact with skin, eyes or clothing. Remove all ignition sources. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Isolate the area and allow vapours to disperse. In confined spaces, sewers, etc., the vapours may collect to form explosive mixtures with air.

6.2 Large spillages: Environmental precautions

Evacuate the area and keep personnel upwind.

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses.

6.3 Methods and material for containment and cleaning up

Allow small spillages to evaporate provided there is adequate ventilation. Contain spillages with sand, earth or any suitable adsorbent material. Transfer to a container for disposal or recovery.

Large spillages:

Evacuate the area and keep personnel upwind. Notify police and fire brigade as soon as possible.

6.4 Reference to other sections

See Section: 8, 13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure operatives are trained to minimise exposures. Ensure adequate ventilation. Avoid breathing vapours. Wear appropriate personal protective equipment, avoid direct contact. Keep away from: Elevated temperature. Keep good industrial hygiene. Wash hands thoroughly after handling. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place. Keep from direct sunlight. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Take precautionary measures against static discharges.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature
Incompatible materials

Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Ground/bond container and receiving equipment. Keep away from direct sunlight. Keep container closed.

Store in a cool/low temperature. Keep at a temperature not exceeding (°C): 17. Strong oxidising agents, Strong acids and alkali., Iron, Aluminium, Air, Halogens, Peroxides.

7.3 Specific end use(s)

See Section: 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Propan-2-ol	67-63-0	400	999	500	1250	WEL
Rosin-based solder flux fume	8050-09-7	-	0.05	-	0.15	WEL, Sen

Source: WEL: Workplace Exposure Limit (UK HSE EH40).

Note: Sen: Capable of causing respiratory sensitisation

8.1.2 Biological limit value

Not established.

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8.1.3	PNECs and DNELs	Not established.
8.2	Exposure controls	
8.2.1	Appropriate engineering controls	Ensure adequate ventilation. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Atmospheric levels should be controlled in compliance with the occupational exposure limit. In confined spaces, sewers, etc., the vapours may collect to form explosive mixtures with air.
8.2.2	Individual protection measures, such as personal protective equipment (PPE)	Keep good industrial hygiene. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing vapours. Avoid contact with skin, eyes or clothing. IF exposed: Wash immediately with water. Wash contaminated clothing before reuse. Do not eat, drink or smoke at the work place.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/face protection



Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166). Recommended: Tightly-fitting safety goggles.

Refilling: Full face shield, Goggles giving complete protection to eyes.

Skin protection



Hand protection:

Wear impervious gloves (EN374). Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

During full contact:

Protective index 6, corresponding > 480 minutes of permeation time according to EN 374.

Nitrile rubber (Minimum thickness: 0.33 mm)

Butyl rubber (Minimum thickness: 0.5 mm)

During splash contact:

At least protective index 5, corresponding > 240 minutes of permeation time according to EN 374

Polychloroprene - CR (Minimum thickness: 0.5 mm)

Unsuitable gloves materials:

Natural rubber/natural latex, Polyvinyl chloride - PVC.

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. A suitable mask with filter type A (EN141 or EN405) may be appropriate. Recommended: Organic vapor cartridge with a particulate pre-filter, type AP2.

Thermal hazards

Not applicable

8.2.3	Environmental Exposure Controls	Avoid release to the environment.
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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Amber Liquid
Odour	Alcohol-like.
Odour threshold	Not established.

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pH	Not established.
Melting point/freezing point	Not established.
Initial boiling point and boiling range	82 °C
Flash point	18 °C
Evaporation rate	Not established.
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits	Flammable Limits (Upper) (%v/v): 12 Flammable Limits (Lower) (%v/v): 2
Vapour pressure	43 hPa
Vapour density	Not established.
Relative density	0.88 g/cm ³
Solubility(ies)	Partly soluble in water.
Partition coefficient: n-octanol/water	Not established.
Auto-ignition temperature	425 °C
Decomposition Temperature	Not established.
Viscosity	Not established.
Explosive properties	Not explosive. Can form explosive mixture with air.
Oxidising properties	Not established.

9.2 Other information None known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Stable under normal conditions.
10.2 Chemical stability	Stable under normal conditions. Hazardous polymerisation will not occur.
10.3 Possibility of hazardous reactions	Vapour is explosive in air at temperatures higher than the flash point. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
10.4 Conditions to avoid	Heat and ignition sources.
10.5 Incompatible materials	Strong oxidising agents, Strong acids and alkali., Iron, Aluminium, Air, Halogens, Peroxides.
10.6 Hazardous decomposition product(s)	Highly flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. In confined spaces, sewers, etc., the vapours may collect to form explosive mixtures with air. When heated to soldering temperatures, the solvents are evaporated and rosin may be thermally degraded. Decomposition products: Carbon monoxide, Carbon dioxide, aliphatic aldehydes, aromatic aldehydes, acids and terpenes.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects	All test data taken from existing ECHA registrations for the substances mentioned.
Acute toxicity - Ingestion	Mixture: Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 30,000 mg/kg bw/day.
Acute toxicity - Inhalation	Mixture: Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >200 mg/l.
Acute toxicity - Skin Contact	Mixture: 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	Mixture: Eye Irrit. 2; Causes serious eye irritation.
Propan-2-ol :	Eye Irrit. 2; Causes serious eye irritation.
benzyl alcohol :	Test Result: Irritating to eyes. (OECD 405) Eye Irrit. 2; Causes serious eye irritation. Test Result: Irritating to eyes. (OECD 405)
Serious eye damage/irritation	Mixture: Based upon the available data, the classification criteria are not met.
Respiratory or skin sensitization	Mixture: Based upon the available data, the classification criteria are not met.
Germ cell mutagenicity	Mixture: Based upon the available data, the classification criteria are not met.
Carcinogenicity	Mixture: Based upon the available data, the classification criteria are not met.

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Reproductive toxicity STOT - single exposure	Mixture: Based upon the available data, the classification criteria are not met. Mixture: STOT SE 3; May cause drowsiness or dizziness.
STOT - repeated exposure	Propan-2-ol: STOT SE 3; May cause drowsiness or dizziness. Test Result: Higher concentrations can produce central nervous system depression, narcosis, and unconsciousness. (OECD 403)
Aspiration hazard	Mixture: Based upon the available data, the classification criteria are not met.
11.2 Other information	Mixture: Based upon the available data, the classification criteria are not met. None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity	Based upon the available data, the classification criteria are not met. Estimated Mixture LC50 >100 mg/l (Fish)
12.2 Persistence and degradability	No data for the mixture as a whole. Propan-2-ol : Readily biodegradable (according to OECD criteria). benzyl alcohol : Readily biodegradable (according to OECD criteria).
12.3 Bioaccumulative potential	No data for the mixture as a whole. Propan-2-ol : The substance has low potential for bioaccumulation. Log Pow < 3. benzyl alcohol : The substance has low potential for bioaccumulation. Bioconcentration factor (BCF) : 1.37 l/kg ww, Log Pow: 1.1 (Q)SAR (US EPA, 2014)
12.4 Mobility in soil	No data for the mixture as a whole. Propan-2-ol : The substance is predicted to have high mobility in soil. Log Pow: < 3. Readily biodegradable. benzyl alcohol : The substance is predicted to have high mobility in soil. Koc @ 20°C = 15.7, Log Koc = 1.2 (Q)SAR (US EPA, 2014)
12.5 Results of PBT and VPVB assessment	None of the substances in this product fulfil the criteria for being regarded as a PBT or vPvB substance.
12.6 Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 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.
13.2 Additional Information	Dispose of contents in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	ICAO/IATA
14.1 UN number	UN 1219	UN 1219	UN 1219
14.2 UN proper shipping name	ISOPROPANOL (ISOPROPYL ALCOHOL) Mixture	ISOPROPANOL (ISOPROPYL ALCOHOL) Mixture	ISOPROPANOL (ISOPROPYL ALCOHOL) Mixture
14.3 Transport hazard class(es)	3	3	3
14.4 Packing group	II	II	II
14.5 Environmental hazards	Not classified	Not classified as a Marine Pollutant.	Not classified
14.6 Special precautions for user	See Section: 2		
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable		

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
15.1.1 EU regulations	
Authorisations and/or Restrictions On Use	Not restricted

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15.1.2	National regulations	None
	Wassergefährdungsklasse (Germany)	Water hazard class: 1 (Self classification)
15.2	Chemical Safety Assessment	A chemical safety assessment is not required under REACH.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements:

Updated substance / mixture classification. Updated version and date. Please review SDS with care

Sections indicated with the following have been revised:

References:

Existing Safety Data Sheet (SDS).

Harmonised Classification(s) for Propan-2-ol (CAS No. 67-63-0) and benzyl alcohol (CAS No. 100-51-6). Existing ECHA registration(s) for Propan-2-ol (CAS No. 67-63-0) and Benzyl alcohol (CAS No. 100-51-6).

Literature References:

1. United States Environmental Protection Agency, 2014. EPI Suite v4.1, <http://epa.gov/oppt/exposure/pubs/episuite.htm>

EU Classification: This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830.

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	Classification Procedure
Flam. Liq. 2; H225	On basis of test data [Flash Point (°C) 18; Boiling Point (°C) 82 [Closed cup]]
Eye Irrit. 2; H319	Threshold Calculation
STOT SE 3; H336	Threshold Calculation

LEGEND

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

CAS: Chemical Abstracts Service

DNEL : Derived No Effect Level

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods

LTEL : Long Term Exposure Limit

PBT: Persistent, Bioaccumulative and Toxic

PNEC : Predicted No Effect Concentration

RID: Regulations concerning the international railway transport of dangerous goods

STEL : Short Term Exposure Limit

vPvB: very Persistent and very Bioaccumulative

Hazard classification / Classification code:

Flam. Liq. 2; Flammable Liquid Category 2

Eye Irrit. 2; Eye Irritation Category 2

STOT SE 3; Specific target organ toxicity — single exposure Category 3

Acute Tox. 4; Acute toxicity, Category 4

Acute Tox. 4; Acute toxicity, Category 4

Hazard Statement(s)

H225: Highly flammable liquid and vapour.

H319: Causes serious eye irritation.

H336: May cause drowsiness or dizziness.

H302: Harmful if swallowed.

H332: Harmful if inhaled.

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Annex to the extended Safety Data Sheet (eSDS)

Not applicable

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