

Carson Modified Millonig Formalin – Technical Memo

SOLUTION:

Carson Modified Millonig Formalin

1 Gallon

Part 12445A

20 Liter Cube

Part 12445C

30 ml vial, 15 ml fill (100/cs)

Carson Modified Millonig Formalin Vial

Part 12445E

For storage requirements and expiration date refer to individual bottle labels.

APPLICATION:

Newcomer Supply Carson Modified Millonig Formalin, is a formalin based ready-to-use fixative that is buffered with sodium monobasic phosphate and sodium hydroxide. Carson Modified Millonig Formalin promotes fixation with rapid tissue penetration, providing excellent cellular detail and ultrastructural preservation.

This multi-purpose fixative has applications for both light microscopy (LM) and electron microscopy (EM) studies (including immunogold labeling) and can readily be used in place of standard 10% formalin fixatives.

METHOD:**Fixation:**

- Small Biopsies: A minimum of 1-2 hours is recommended.
- Larger Specimens: A minimum of 4-6 hours is recommended.

Solutions: All solutions are manufactured by Newcomer Supply, Inc.

FIXATION PROCEDURE:

1. Place fresh tissue specimen in Carson Modified Millonig Formalin as soon as possible after surgical excision.
 - a. See Procedure Notes #1 and #2.
2. Hold tissue specimens in Carson Modified Millonig Formalin until ready to process.
 - a. See Procedure Note #3.
3. **Light Microscopy Processing:** place on tissue processor starting in a primary fixation step or primary alcohol step.
4. **Electron Microscopy Processing:** after initial Carson Modified Millonig Formalin fixation, a secondary osmium tetroxide fixation is most often recommended. Refer to laboratory protocol for electron microscopy processing.

PROCEDURE NOTES:

1. A specimen initially received in Formalin 10%, Phosphate Buffered, should be rinsed thoroughly in tap water prior to placing in Carson Modified Millonig Formalin.
2. Tissues requested for electron microscopy studies should be fixed within 15 minutes after surgical excision and minced into 1 mm cubes for expedient fixative infiltration.
3. Tissue can remain in Carson Modified Millonig Formalin over an extended period of time.

REFERENCES:

1. Bancroft, John D., and Marilyn Gamble. *Theory and Practice of Histological Techniques*. 6th ed. Oxford: Churchill Livingstone Elsevier, 2008. 68.
2. Carson, Freida L., and Christa Hladik. *Histotechnology: A Self-Instructional Text*. 3rd ed. Chicago, Ill.: American Society of Clinical Pathologists, 2009. 11-12, 335-336.
3. Carson, Freida L., and James Martin. "Formalin Fixation for Electron Microscopy." *The Journal of Histotechnology* 2.2 (1979): 58-60.
4. Sheehan, Dezna C., and Barbara B. Hrapchak. *Theory and Practice of Histotechnology*. 2nd ed. St. Louis: Mosby, 1980. 46.
5. Modifications developed by Newcomer Supply Laboratory.

Part Number: 12445

1. PRODUCT AND COMPANY IDENTIFICATION

- 1.1 Product Name:** Carson Modified Millonig Formalin
Part Number: 12445
CAS-No.: Not applicable
SDS Number: 2470
- 1.2 Recommended Use:** Laboratory Chemicals
- 1.3 Company:** Newcomer Supply
 2505 Parview Road
 Middleton, WI 53562 USA
- Telephone:** 1-800-383-7799
Fax: 1-608-831-0866
Website: www.newcomersupply.com
Email: info@newcomersupply.com

24 HOUR EMERGENCY CONTACT
 CALL CHEMTREC: 1-800-424-9300
 Contact CHEMTREC only in the event of
 an emergency involving a chemical spill,
 leak, fire, exposure or other accident.

2. HAZARD(S) IDENTIFICATION

- 2.1 Classification of the substance or mixture**
 GHS Classification, (in accordance with 29 CFR1910.1200)
 Acute toxicity (oral), Category 4
 Acute toxicity (inhalation), Category 4
 Skin sensitisation, Category 1
 Germ cell mutagenicity, Category 2
 Carcinogenicity, Category 1A
 Specific Target Organ Toxicity – Single exposure, Category 1

2.2 GHS Label elements

Signal Word DANGER

Pictogram



Hazard Statement(s):

- Harmful if swallowed
- Harmful if inhaled
- May cause an allergic skin reaction
- Suspected of causing genetic defects
- May cause cancer
- Causes damage to organs

Precautionary Statement(s):

Prevention:

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Wash skin thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/protective clothing/eye protection/face protection.

Response:

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- IF ON SKIN: Gently wash with plenty of soap and water.
- Take off contaminated clothing and wash before reuse.
- If skin irritation or a rash occurs: Get medical advice/attention.

Part Number: 12445

· IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

· IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

· Rinse mouth.

· Specific treatment: see first aid measures in section 4.

· Immediately call a POISON CENTER or doctor/physician.

Storage:

· Store locked up.

Disposal:

· Dispose of contents/ container to an approved waste disposal plant.

2.3 Description of any hazards not otherwise classified None

2.4 >1% of mixture with unknown acute toxicity None

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture

Hazardous Components

Component		Concentration
Name	Formaldehyde	
CAS-No.	50-00-0	1-2%
Name	Methyl Alcohol	
CAS-No.	67-56-1	<1%
Name	Sodium Hydroxide	
CAS-No.	1310-73-2	<1%

4. FIRST-AID MEASURES

4.1 Description of necessary measures

Inhalation (breathing)

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

Skin Contact

IF ON SKIN: Gently wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation or a rash occurs: 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. Immediately call a POISON CENTER or doctor/physician.

Ingestion (swallowed)

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

4.2 Most important symptoms and or effects, acute and delayed

The most important symptoms/effects are presented in Section 2 and or Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media

Carbon dioxide, dry chemical, water spray, alcohol-resistant foam.

5.2 Specific hazards arising from the substance or mixture

No data available

5.3 Protective equipment and precautions for fire-fighters

Part Number: 12445

Wear a positive-pressure self-contained breathing apparatus if necessary. Wear chemical resistant clothing as recommended by clothing manufacturer.

NFPA Rating

Health	Fire	Reactivity
hazard: 2	hazard: 1	hazard: 0

6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures

Apply personal protective equipment (see Section 8). Use in a properly ventilated area. Avoid breathing vapors. Avoid skin contact. Avoid eye contact. Wash hands after use. In case of large spill, remove personnel to a safe area. Keep product away from heat, flame, ignition sources, and reactive materials. Avoid accumulation of vapor to form explosive concentration. Pay particular attention to low areas where vapor accumulates more easily.

6.2 Methods and material for containment and cleaning up

Apply personal protective equipment (see Section 8). Ensure proper ventilation. Contain spill. Prevent further leakage if possible and safe to do so. Evacuate area and limit access. Prevent entry of material into sewage drains and confined areas. Dispose of any contaminated materials according to local regulations. Eliminate sources of ignition.

7. HANDLING AND STORAGE
7.1 Precautions for safe handling

Keep away from heat/sparks/open flames/hot surfaces – No smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Wear protective gloves/protective clothing/eye protection/face protection.

7.2 Conditions for safe storage, including any incompatibilities

Refer to Section 2.2 for proper storage temperature. Store the tightly closed container in a cool, dry, well-ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
8.1 Control Parameters

Components with limit values that require monitoring at the workplace

Component	CAS-No.	Regulatory	Value	Parameters
Formaldehyde	50-00-0	OSHA PEL	TWA	0.75 ppm
		OSHA PEL	STEL	2 ppm
		ACGIH TLV	C	0.3 ppm (0.37 mg/m ³)
		NIOSH REL	TWA	0.016 ppm
		NIOSH REL	C	0.1 ppm 15-minute

Component	CAS-No.	Regulatory	Value	Parameters
Methyl Alcohol	67-56-1	OSHA PEL	TWA	200 ppm (260 mg/m ³)
		ACGIH TLV	TWA	200 ppm (262 mg/m ³)
		ACGIH TLV	STEL	50 ppm (328 mg/m ³)
		NIOSH REL	TWA	200 ppm (260 mg/m ³)
		NIOSH REL	STEL	250 ppm (325 mg/m ³)

Component	CAS-No.	Regulatory	Value	Parameters
Sodium Hydroxide	1310-73-2	OSHA PEL	TWA	2 mg/m ³
		ACGIH TLV	C	2 mg/m ³

Part Number: 12445

		NIOSH REL	C	2 mg/m ³
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8.2 Exposure Controls

Appropriate engineering controls

Use in a properly ventilated area. Remove/wash before reuse contaminated clothing. Wash hands upon exiting work premises. Use product in an appropriately designated fume hood. Take measures to keep concentrations below acceptable limits.

8.3 Personal Protective Equipment

Eye/Face protection

Wear chemical safety goggles and/or a full face shield if splashing is possible. Keep eye wash fountain nearby.

Skin Protection

Wear chemical-resistant gloves. Gloves should be resistant to components of product. Refer to glove manufacturer for appropriate type and glove thickness.

Body Protection

No data available

Respiratory Protection

Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Formaldehyde: Where the potential exists for exposure over 0.016 ppm: use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus or an emergency escape air cylinder.

Exposure to 20 ppm is immediately dangerous to life and health. If the possibility of exposure above 20 ppm exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder. In case of emergency, entry into unknown concentrations, or escape, wear a self-contained positive-pressure breathing apparatus.

Other Information

None

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Colorless liquid
Odor	Pungent odor
Odor threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Initial boiling point and boiling range	No data available
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper flammability or explosive limits	No data available
Lower flammability or explosive limits	No data available
Vapor pressure	No data available
Vapor density	No data available
Relative density	No data available

Part Number: 12445

Solubility(ies)	Water soluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available

10. STABILITY AND REACTIVITY
10.1 Reactivity

No data available

10.2 Chemical stability

Stable in a closed container within label-specified storage temperature and expiration date.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat, sparks, open flame, and ignition sources.

10.5 Incompatible materials

Formaldehyde reacts violently with nitrogen oxides; oxidizing agents (such as perchlorates, peroxides, permanganates, chlorates, nitrates, chlorine, bromine and fluorine); mixtures of perchloric acid and aniline; nitromethane; magnesium carbonate; and hydrogen peroxide. Formaldehyde reacts with phenol and hydrogen chloride to form toxic bis(chloromethyl) ether. Formaldehyde is not compatible with strong acids (such as hydrochloric, sulfuric and nitric); strong bases (such as sodium hydroxide and potassium hydroxide); iodine; iron; silver; isocyanates; amines; anhydrides; and liquid oxygen.

10.6 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION
11.1 Information on toxicological effects
Inhalation exposure

Formaldehyde: Difficulty in breathing was experienced at 10 to 20 ppm. Upper airway irritation and increased nasal airway resistance were reported at 0.1 to 25 ppm and lower airway and chronic pulmonary obstruction at 5 to 30 ppm. Inhaling formaldehyde can irritate the lungs. Higher exposures may cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency.

Oral exposure

Acute oral exposure to formaldehyde can result in serious systemic symptoms or death.

Dermal exposure

No data available

Skin corrosion/irritation

Formaldehyde and sodium hydroxide are corrosive and contact can severely irritate and burn the skin.

Serious eye damage/irritation

Formaldehyde: 10 to 20 ppm produces almost immediate eye irritation. Most subjects experience irritation of the eyes, nose, and throat at 1 to 3 ppm; many subjects cannot tolerate prolonged exposures to 4 to 5 ppm. Sodium hydroxide is corrosive and contact severely irritate the eyes.

Part Number: 12445

Respiratory or skin sensitization

Formaldehyde exposure for 5 to 10 minutes to 50 to 100 ppm might cause serious injury to the lower respiratory passages. Formaldehyde may cause a skin allergy and an asthma-like allergy. Formaldehyde may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness.

Germ Cell mutagenicity

No data available

Reproductive toxicity

There is limited evidence that formaldehyde may damage the developing fetus and affect female fertility.

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Acute toxicity

Formaldehyde:

LD50 rat oral 100 mg/kg

LD50 rat dermal 270 mg/kg

LC50 rat inhalation 0.48 mg/l/4 hours

Carcinogenicity

IARC: Formaldehyde: Group 1, carcinogenic to humans

NTP: Formaldehyde: Known human carcinogen

OSHA: Formaldehyde: Specifically regulated carcinogen

Additional information

RTECS: No data available

12. ECOLOGICAL INFORMATION
12.1 Ecotoxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS
13.1 Waste disposal methods
Contents

Dispose of contents in a safe manner to comply with local, state and federal regulations. Contact a licensed professional waste disposal service to dispose of this material.

Part Number: 12445

Contaminated packaging

Dispose of packaging in a safe manner to comply with local, state and federal regulations. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION**14.1 DOT (US)**

UN-Number	No data available
Proper shipping name	No data available
Hazard class	No data available
Packing group	No data available
Environmental hazards	No data available

15. REGULATORY INFORMATION**15.1** No data available**16. OTHER INFORMATION**

Preparation Information

Newcomer Supply Inc.

800-383-7799

www.newcomersupply.com

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