SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier: **Buffered Formalin 10% 500 mL**
Buffered Formalin 10% 2L
Synonyms: **BUF00536F, BUF01536F, BUF00536S**

Global Contact: Perrigo Company
Address: 515 Eastern Avenue
Allegan, MI 49010 USA

Telephone number: +1 269-673-8451
Emergency telephone: **+1 888-464-2986**

Australian Contact: Perrigo Australia
Address: 25-29 Delawney Street
Balcatta, Western Australia 6021 Australia

Telephone number: +618 9441 7800
Emergency telephone: +1 760-476-3962 Code 333304
Poisons Information Centre: 13 11 26

New Zealand Contact: Orion Laboratories (NZ) Ltd
Address: PO Box 781
Whangaparaoa, New Zealand

Telephone number: +618 9441 7800
Emergency telephone: +1 760-476-3962 Code 333304
National Poisons Centre: 0800 764 766

Recommended use: Preservation of pathological specimens.
Restrictions on use: All other uses.

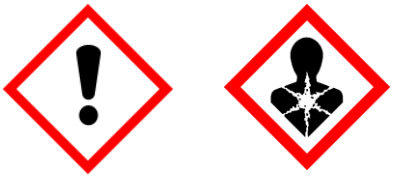
HSNO Number: Not Applicable

2. HAZARD(S) IDENTIFICATION

Classification:

Physical	Health
Not Hazardous	Skin Sensitization Category 1 (H317) Carcinogen Category 1B Specific Target Organ Toxicity – Single Exposure Category 2 (H371)

Label Elements



DANGER!

Hazard statement(s)

May cause an allergic skin reaction.
May cause cancer.
May cause damage to the optic nerve and central nervous system.

Precautionary statement(s)

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist or vapour.
Wash hands thoroughly after handling.

Precautionary statement(s)

Contaminated clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing and eye protection.
IF on skin: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical attention. Take off contaminated clothing and wash it before reuse.
IF exposed or concerned: Get medical attention.
Store locked up.
Dispose of container and contents in compliance with all national and local regulations.
Do not eat, drink or smoke when using this product.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration	Substance Classification
Formaldehyde	50-00-0	3.6%	Carcinogenicity Category 1B (H350), Acute Toxicity Category 3 (H301, H311, H331); Skin Corrosion Category 1B (H314) Eye Corrosion Category 1 (H318) Skin Sensitization Category 1 (H317) Aquatic Acute Toxicity Category 3 (H402)
Methanol	67-56-1	<2%	Flammable Liquid Category 2 (H225) Acute Toxicity Category 3 (H301, H311, H331) Specific Target Organ Toxicity Single Exposure Category 1 (H370)

4. FIRST-AID MEASURES

Inhalation: Move person to fresh air. If irritation occurs or symptoms develop, get medical attention.
Skin contact: Wash skin with soap and water. If irritation or rash develop, get medical attention. Remove contaminated clothing and launder it before reuse.
Eye contact: Immediately flush eyes with water while lifting the upper and lower lids for at least 15 minutes. Remove contact lenses, if present and easy to do after 5 minutes of flushing, then continue flushing. Get medical attention if irritation persists.
Ingestion: Rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to a person who is unconscious or convulsing. Get prompt medical attention.

Most important symptoms/effects, acute and delayed: May cause eye and skin irritation. May cause an allergic skin reaction. Exposure to methanol causes damage to the optic nerve and central nervous system. Formaldehyde overexposure may cause cancer. Risk of cancer depends on the level and duration of exposure.

Indication of immediate medical attention and special treatment, if necessary: Prompt medical attention is recommended for ingestion.

5. FIRE-FIGHTING MEASURES

Extinguishing media: Use any media that is suitable for the surrounding fire.

Specific hazards arising from the chemical: Not flammable or combustible. Contains a small amount of methanol. Flammable methanol vapours may be emitted and collect in confined areas.

Special protective equipment and precautions for fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing for all fires involving chemicals. Cool fire exposed containers with water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Wear appropriate protective clothing and equipment as described in Section 8. Eliminate all ignition sources and ventilate the area. Ensure that formaldehyde levels do not exceed published exposure limits.

Environmental Precautions: Prevent spill from entering sewers and water courses. Report releases as required by local and national authorities.

Methods and materials for containment and cleaning up: Stop spill at the source if it is safe to do so. Absorb with an inert material. Collect into a suitable container for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid eye and skin contact. Avoid breathing vapours or mists. Use with adequate ventilation. Wash thoroughly after handling. Remove contaminated clothing and launder before re-use. Keep product away from excessive heat, direct sunlight and flames. Do not leave the container in direct sunlight.

Conditions for safe storage, including any incompatibilities: Protect containers from physical damage. Store in a cool area. Keep away from excessive heat and open flames. Store out of direct sunlight. Store away from oxidizers. Store above 15 ºC and below 30ºC.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Formaldehyde	0.3 ppm Ceiling ACGIH TLV 1 ppm TWA AU OEL, 2 ppm STEL (Sen) 0.5 ppm (8 hr shift); 0.33 ppm (12 hr shift); 1 ppm Ceiling NZ OEL
Methanol	200 ppm TWA ACGIH TLV, 250 ppm STEL (Skin) 200 ppm TWA AU OEL, 250 ppm STEL 200 ppm TWA NZ OEL, 250 ppm STEL

Appropriate engineering controls: Use with adequate general or local exhaust ventilation to maintain exposure levels below occupational exposure limits and minimize exposure levels.

Individual protection measures:

Respiratory protection: If exposure limits are exceeded or irritation is experienced, an approved organic vapour/formaldehyde or supplied air respirator is recommended. Selection of respiratory protection depends on the contaminant type, form and concentration. Select in accordance with applicable regulations and good Industrial Hygiene practice.
Skin protection: Impervious gloves recommended.
Eye protection: Chemical safety goggles recommended.
Other: None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, colour, etc.): Clear, colourless liquid.
Odour: Pungent formalin odour

Odour threshold: 1 ppm (formalin)	**pH:** 6.8-7.2
Melting point/freezing point: Not determined	**Boiling Point:** Approx. 100°C
Flash point: Not determined	**Evapouration rate:** Not determined
Flammability (solid, gas): Not applicable	**VOC:** Not determined
Flammable limits: LEL: 6.0% (methanol)	**UEL:** 73% (formaldehyde)
Vapour pressure: Not determined	**Vapour density:** 1.11 (methanol)
Relative density: 1.00-1.03	**Solubility(is):** Miscible in water
Partition coefficient: n-octanol/water: Not determined	**Auto-ignition temperature:** Not determined
Decomposition temperature: Not determined	**Viscosity:** Not determined

10. STABILITY AND REACTIVITY

Reactivity: Not reactive under normal conditions of use.
Chemical stability: Stable.
Possibility of hazardous reactions: Reaction with strong oxidizers will generate heat and cause fire.
Conditions to avoid: Avoid excessive heat, direct sunlight and flames.
Incompatible materials: Avoid oxidizing agents, acids and bases.
Hazardous decomposition products: Thermal decomposition may yield carbon oxides.

11. TOXICOLOGICAL INFORMATION

Acute effects of exposure:
Inhalation: Inhalation of vapours may cause irritation of the mucous membranes and upper respiratory tract and central nervous system effects such as dizziness, drowsiness, visual disturbances and headache. Based on human experience, formaldehyde may cause respiratory sensitization and asthma-like symptoms.
Ingestion: Swallowing may cause gastric distress, nausea and vomiting and visual disturbances. Large amounts may cause blindness.
Skin contact: May cause irritation. May cause an allergic skin reaction.
Eye contact: Contact may cause irritation with redness, pain and tearing.
Chronic Effects: May cause damage to the optic nerve and central nervous system. Methanol: In humans, transient central nervous system effects appear above blood methanol levels of 200 mg/L, ocular symptoms appear above 500 mg/L and fatalities have often occurred in untreated patients with initial methanol levels in the range of 1500-2000 mg/L. Other effect may be exhibited at lower inhalation concentrations and lower methanol blood levels.
Sensitization: Formaldehyde was shown to cause sensitization in mouse local lymphnode assay and guineas pig assays.
Germ Cell Mutagenicity: Components are not classified as germ cell mutagens. Formaldehyde causes mutations in some test systems.

Reproductive Toxicity: Not a reproductive toxin. Methanol: Exposure to methanol at concentrations of up to 1800 ppm for over 1 year did not produce overt signs of toxicity (motor incoordination, blindness, and/or respiratory effects) in adult female nonhuman primates. Chronic methanol exposure did not interfere with the menstrual cycle or the ability of females to conceive. The timed-mating procedures used (3 matings/day between days 11 and 13 of the menstrual cycle) typically produce close to 100 % conception rates in normal groups of M. fascicularis females (Mahoney, 1975). The overall conception rate for this study was lower than expected, at 80 %. This was due to a side effect: 1 of the males in Cohort 2 successfully impregnated only 4 females. Prenatal exposure to methanol had no effect on infant growth and physical development for the first 9 months. . In a reproductive study, rats were exposed to 0-40 ppm formaldehyde for 6 hr/days on days 6-20 of gestation. At 40 ppm, maternal toxicity was observed. Formaldehyde is slightly fetotoxic at 20 ppm. Neither embryolethal nor teratogenic effects were observed following inhalation exposure at levels up to 40 ppm.

Carcinogenicity: Formaldehyde is listed by IARC as "Carcinogenic to Humans", (Group 1), by US NTP a "Known to be a Human Carcinogen", by ACGIH as a "Suspected Human Carcinogen"(A2), by the European Union as a Carcinogen Category 1B.

Acute Toxicity Values: Acute Toxicity Estimate (Oral) calculated: >5000 mg/kg
Formaldehyde: LD50 oral rat 640 mg/kg, Inhalation rat LC50 5.9 mg/L
Methanol: Oral Rat LD50 - 5628 mg/kg; Inhalation Rat LC50 – 64,000 ppm/4 hr; Skin Rabbit LD50 – 15,800 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity values: Formaldehyde: LC50 Pimephales promelas (Fathead minnow) 24.1 mg/L/96 hr
Methanol: Lepomis macrochirus LC50: 15400 mg/L/96 hr, Daphnia magna EC50: 18260 mg/L/96 hr, Pseudokirchnerella subcapitata EC50: 22000 mg/L/96 hr
Persistence and degradability: Methanol and formaldehyde are readily biodegradable in screening tests.
Bioaccumulative potential: Methanol and formaldehyde are readily biodegradable in screening tests
Mobility in soil: Methanol and formaldehyde are expected to have very mobility in soil.
Other adverse effects: None known.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state and federal regulations. No specific disposal method is recommended.

14. TRANSPORT INFORMATION

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
IMDG		Not Regulated			No
IATA		Not Regulated			No
ADG		Not Regulated			No

Hazchem Code: Not applicable

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable – product is transported only in packaged form.

Special precautions: None known.

15. REGULATORY INFORMATION

Safety, health, and environmental regulations specific for the product in question.

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP): Schedule 6.

Australia Inventory: All components are listed on the AICS.
New Zealand Inventory: All components are listed on the HSNO inventory.

16. OTHER INFORMATION

NFPA Rating: Health = 2 Flammability = 1 Instability = 0
HMIS Rating: Health = 2* Flammability = 1 Physical Hazard = 0

SDS Revision History: Convert to AU/NZ GHS format
Date of preparation: 2 December 2016
Date of last revision: 17 August 2016

Full Text of GHS Classification and H Phrases from Section 3:

H225 Highly flammable liquid and vapour.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H331 Toxic if inhaled.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H370 Causes damage to nervous system and eyes.
H402 Harmful to aquatic.

List of Abbreviations or Acronyms:

ACGIH American Conference of Industrial Hygienists
ADG Australian Dangerous Goods
AICS Australian Inventory of Chemical Substances
AU Australia
EC Effective Concentration
EU European Union
GHS Globally Harmonized System of Classification and Labelling of Chemicals
HSNO Hazardous Substances and New Organisms
IARC International Agency of Research on Cancer
IATA International Air Transport Association
IMDG International Maritime Dangerous Goods
LC Lethal Concentration
LD Lethal Dosage
LEL Lower Explosive Limit
NTP National Toxicology Program
NZ New Zealand
OEL Occupational Exposure Limits
US OSHA United States Occupational Safety and Health Administration
PEL Permissible Exposure Limit
SDS Safety Data Sheet
STEL Short Term Exposure Limit
TWA Time-Weighted Average
UEL Upper Explosive Limit
VOC Volatile Organic Compounds
WES Workplace Exposure Standards
WHS Work Health and Safety

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