

Product Name: Flow Cytometry Fixation/Permeabilization Buffer I (1X)

Reviewed on: 28 August 2018

1. Identification of Substance:

- **Other means of identification: Catalog Number:** FC007
Components: Fixation/Permeabilization/Wash Buffer (Contains 1-4% Formaldehyde, <1.5% Methanol and <0.1% Sodium azide)
- **GHS product identifier:** Flow Cytometry Fixation/Permeabilization Buffer I (1X)
- **Application of the substance / the preparation:** For Research Use Only
 - **Manufacturer/Supplier:**
Bio-Techne - R&D Systems Inc.
614 McKinley Place N.E.
Minneapolis, MN 55413 USA
1-800-343-7475
- **For product related questions call:** 1-800-343-7475 or 1-612-379-2956, In Europe call: +44(0)1235-529449.
- **Emergency information:** In case of a chemical emergency, spill, leak, fire, or accident, call CHEMTREC at 1-800-424-9300 (USA or Canada). Outside USA or Canada: +1 703-527-3887 (collect calls accepted).

2. Hazard Identification:

- **Classification: Regulation (EC) No. 1272/2008 (CLP/EU-GHS), 29 CFR 1910.1200 (OSHA): FORMALDEHYDE SOLUTION, Non-Stabilized**

Carcinogen, 1B
Mutagen, 2
Skin Sensitization, 1
Signal Word: DANGER



- **Hazard Statements:** H350: May cause cancer by inhalation. H317: May cause an allergic reaction. H341: Suspected of causing genetic defects.
- **Precautionary Statements:** P280: Wear protective gloves/protective clothing/eye protection/face protection. P261: Avoid breathing dust/fume/gas/mist/ vapours/spray. P272: Contaminated work clothing should not be allowed out of the workplace. P201: Obtain special instructions before use. P281: Use personal protective equipment as required. P202: Do not handle until all safety precautions have been read and understood.
- **Responses:**
IF SWALLOWED: Immediately call a Poison Control Center or physician. See specific treatment in this MSDS. Rinse mouth. Do NOT induce vomiting.
IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/physician if you feel unwell. See specific treatment in this MSDS. Remove/take off immediately all contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.
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. See specific treatment in this MSDS.
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.
- **Classification according to EU Directives 67/548/EEC or 1999/45/EC:** Xn: Harmful. Xi: Irritant.
- **R-phrases:** R20/21/22: Harmful by inhalation, in contact with skin and if swallowed. R36/37/38: Irritating to eyes, respiratory system and skin. R68/20/21/22: Harmful: possible risk of irreversible effect through inhalation, in contact with skin and if swallowed.
- **S-phrases:** S36/37/39: Wear suitable protective clothing, gloves, and eye/face protection. S45: In case of accident or if you feel unwell, seek medical advice immediately (show label if possible). S51: Use only in well-ventilated areas.

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- **Special Hazards:** none.

3. Information on Ingredients:

- **Description:** Formaldehyde **Synonyms:** Formalin **Formula:** CH₂O

Contains	CAS No.	EC-No.	Index-No.	Content
Formaldehyde	50-00-0	200-001-8	NA	≤4%
Methanol	67-56-1	200-659-6	NA	≤1.5%

4. First Aid Measures:

- **After inhalation:** Move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Show this MSDS.
- **After skin contact:** Wash off with soap and plenty of water. Take victim immediately to a hospital. Consult a physician. Show this MSDS.
- **After eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Show this MSDS.
- **After swallowing:** Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Call a physician. Show this MSDS.
- **Most important symptoms and effects, both acute and delayed:** Unknown
- **Indication of any immediate medical attention and special treatment needed:** no data available

5. Fire Fighting Measures:

- **Suitable extinguishing agents:** Dry chemical, carbon dioxide, water spray or alcohol-resistant foam.
- **Special hazards arising from the substance or mixture:** Emits toxic fumes under fire conditions. Carbon oxides.
- **Protective equipment:** Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
- **Further information:** Use water spray to cool unopened containers.

6. Accidental Release Measures:

- **Personal precautions, protective equipment and emergency procedures:** Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate all personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- **Environmental precautions:** Prevent further leakage or spillage is safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
- **Methods and materials for containment and cleaning up:** Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

7. Handling and Storage:

- **Precautions for safe handling:** Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition – No Smoking. Take measures to prevent the buildup of electrostatic charge.
- **Conditions for safe storage, including incompatibilities:** Store locked up. Store in a cool place. Keep container tightly closed in a dry and well ventilated place.

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8. Exposure Controls and Personal Protection:

- Control parameters:

Component: Formaldehyde: UK EH40 WEL Workplace Exposure Limits: STEL 2 ppm, 2.5 mg/m³. TWA 2 ppm, 2.5 mg/m³. NIOSH REL: STEL 0.1 ppm, 0.12 mg/m³. TWA 0.016 ppm, 0.02 mg/m³.

Component: Methanol: UK EH40 WEL Workplace Exposure Limits: STEL 250 ppm, 333 mg/m³. TWA 200 ppm, 266 mg/m³. NIOSH REL: STEL 250 ppm, 325 mg/m³. TWA 200 ppm, 260 mg/m³.

- Appropriate engineering controls:** Wear protective gloves/protective clothing/eye protection/face protection. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling product.
- Personal Protective Equipment:**
- Eye and Face Protection:** Tightly fitting safety goggles. Face shield (8-inch minimum).
- Skin Protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
- Body Protection:** Complete suit protection against chemicals, flame retardant antistatic protective clothing, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- Respiratory Protection:** Where risk assessment shows air-purifying respirators are appropriate use full-face respirator.

9. Physical and Chemical Properties:

- Appearance:** Colorless Liquid.
- Odor:** Pungent
- Odor threshold:** Not available
- pH:** Not available
- Melting point/freezing point:** Not available
- Boiling point/Boiling range:** 189° C
- Flash point:** Not available
- Evaporation rate:** Not available
- Flammability (solid, gas):** Not available
- Upper/lower flammability or explosive limits:** Not available
- Vapor density:** Not available
- Vapor pressure:** Not available
- Relative density:** Not available
- Solubility in/Miscibility with Water:** Soluble
- Partition coefficient:** Not available
- Auto igniting:** Not available
- Decomposition temperature:** Not available
- Viscosity:** Not available

10. Stability and Reactivity:

- Reactivity:** Strong oxidizers, alkalis and acids, phenols, urea, strong oxidizers.
- Chemical Stability:** Contains the following stabilizer: (Methanol ≤1.5%).
- Possibility of hazardous reactions:** no data available.
- Conditions to avoid:** Heat, flames.
- Incompatible materials:** Strong oxidizers, alkalis and acids, phenols, urea, strong oxidizers.
- Hazardous decomposition products:** no data available.

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11. Toxicological Information:

- **Acute toxicity:**

Formaldehyde: rat oral – LD50 = 800 mg/kg; mouse oral – LD50 = 42 mg/kg; rat inhalation – LCLo = 250 mg/kg; mouse inhalation – LCLo = 900 mg/kg. Methanol: rat oral – LD50 = 6200 mg/kg; mouse oral – LD50 = 400 mg/kg

- **Skin corrosion/irritation:**

Formaldehyde: no data available Methanol: rabbit dermal – 16 g/kg.

- **Serious eye damage/irritation:** no data available.

- **Respiratory or skin sensitization:** Formaldehyde is a skin irritant and a sensitizer. Contact will cause white discoloration, smarting, drying, cracking, and scaling.

- **Germ cell mutagenicity:** no data available.

- **Carcinogenicity:** Formaldehyde has the potential to cause cancer in humans (IARC). Repeated and prolonged exposure increases the risk. Methanol – no data available.

- **Reproductive toxicity:** no data available.

- **Specific target organ toxicity (STOT) -single exposure:** Formaldehyde - no data available. Methanol – acute intoxication causes CNS depression as observed by narcosis, in coordination, lethargy, drowsiness and prostration. A latent period follows the initial intoxication in which formic acid accumulates in the body causing metabolic acidosis.

- **Specific target organ toxicity (STOT) -repeated exposure:** Formaldehyde – prolonged exposure may cause respiratory impairment. Methanol – no data available.

- **Aspiration hazard:** No data available

- **Information on likely routes of exposure:** Routes of entry anticipated; oral, dermal, inhalation.

- **Symptoms related to the physical, chemical and toxicological characteristics:**

Inhalation: Formaldehyde – irritating to respiratory tract and eyes. Methanol – causes conjunctivitis, headache, giddiness, insomnia, gastric disturbances, and bilateral blindness.

Ingestion: Formaldehyde – causes severe irritation and inflammation of the mouth, throat, and stomach. Methanol – Causes acute intoxication followed by a latent period of metabolic acidosis and severe abdominal, leg and back pain, followed by blindness.

Skin contact: Formaldehyde – severe skin irritant and skin sensitizer. Methanol – no data available.

Eye contact: Formaldehyde – causes injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. Methanol - Causes serious eye irritation which can lead to blindness.

- **Delayed and immediate effects and also chronic effects from short and long term exposure:** Formaldehyde – the perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts. This desensitization can lead to overexposure. Methanol – Acute intoxication is manifested by signs of narcosis. This is followed by formic acid accumulation in the body causing metabolic acidosis. Severe abdominal pain and severe abdominal, leg and back pain, followed by blindness.

12. Ecological Information:

- **Ecotoxicity:** Formaldehyde - No data available. Methanol – low acute toxicity to aquatic organisms. LD50 > 100 mg/L

- **Biodegradability:** Formaldehyde - No data available. Methanol – reacts with nitrogen dioxide in polluted atmospheres to produce methyl nitrite. It is a volatile organic substance.

- **Bioaccumulative potential:** Formaldehyde - No data available. Methanol -

- **Mobility in soil:** Formaldehyde - No data available. Methanol – no data available.

- **Other adverse effects:** Formaldehyde - No data available. Methanol – As a volatile organic compound, it can contribute to the formation of photochemical smog in the presence of other volatile organic compounds.

13. Disposal Considerations:

- **Disposal methods:** Dispose of waste in accordance to applicable national, regional, or local regulations. Contact a licensed

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professional waste disposal service to dispose of this material.


- **Contaminated packaging:** Dispose in the same manner as unused product.

14. Transportation Information:

ADR/RID ADN/ADNR IMDG IATA/DOT

ADR/DOT/:	UN Number:	UN 3334
RID	Proper Shipping Name:	Aviation regulated liquid, n.o.s. (Formaldehyde solution <25%)
	Hazard class:	9
	Packing group:	III
IATA:	UN Number:	UN 3334
	Proper Shipping Name:	Aviation regulated liquid, n.o.s. (Formaldehyde solution <25%)
	Hazard class:	9
	Packing group:	III
IMDG:	UN Number:	UN 3334
	Proper Shipping Name:	Aviation regulated liquid, n.o.s. (Formaldehyde solution <25%)
	Hazard class:	3
	Packing group:	III
	Marine Pollutant:	No

15. Regulations:

- **US Federal and State Regulations**
- **CERCLA/SARA 302:** Formaldehyde is listed. Methanol is not listed.
- **CERCLA/SARA 304:** Formaldehyde is listed. Methanol is not listed.
- **SARA 313:** Formaldehyde is listed. Methanol is listed.
- **TSCA (Toxic Substances Control Act):** Formaldehyde is listed. Methanol is listed.
- **California Proposition 65:**  **WARNING:** This product can expose you to chemicals including formaldehyde, which is known to the State of California to cause cancer, and methanol, which is known to the State of California to cause reproductive toxicity with developmental effects. For more information, go to www.P65Warnings.ca.gov.

16. Other Information:

- **Notice to reader:** To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

2. Hazard Identification:

Classification: This substance does not meet the classification criteria to be listed as a hazardous material according to the **Regulation (EC) No. 1272/2008 (CLP/EU-GHS)**, **29 CFR 1910.1200 (OSHA)**: Contains Sodium Azide (less than 0.1%) – not a hazardous substance at this concentration.

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- **Pictogram:** Not applicable.
- **Signal Word:** Not applicable.
- **Hazard statements:** Not applicable.
- **Precautionary statements:** Not applicable.
- **Response:** Not applicable.
- **Hazard Symbol / R-Phrase / S-Phrase:** Not applicable.
- **Label Elements:** Not applicable.
- **Special Hazards:** Not applicable.

3. Information on Ingredients:

- **Contains: Sodium Azide**

Contains	CAS No.	EC-No.	Index-No.	Content
Sodium Azide	26628-22-8	247-852-1	011-004-00-7	<0.1% Not hazardous at this concentration

4. First Aid Measures:

- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly. Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water. Consult a doctor.
- **After swallowing:** Rinse mouth with water. Seek medical attention and appropriate follow-up.

5. Fire Fighting Measures:

- **Suitable extinguishing agents:** Use water spray or extinguishing measure that is appropriate to local circumstances and the surrounding environment.
- **Hazards from the substance or mixture:** Sodium oxides.
- **Special precautions for fire-fighters:** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
- **Other information:** This product does not burn.

6. Accidental Release Measures:

- **Person-related safety precautions:** Use standard laboratory practices and appropriate personal protective equipment to prevent contamination of skin, eyes and personal clothing. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.
- **Measures for environmental protection:** Keep away from drains.
- **Measures for containment and cleaning:** Soak up with inert absorbent material and dispose of as per section 13. Keep in suitable, closed containers for disposal.
- **Additional information:** Not available.

7. Handling and Storage:

- **Precautions for safe handling:** Avoid inhalation of vapor or mist. Avoid contact with eyes and skin. No special precautions are necessary if used properly.
- **Conditions for safe storage:** Store in a cool, dry place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Do not store in incompatible containers.

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8. Exposure Controls and Personal Protection:

- **Control parameters:** Not available.
- **Appropriate engineering controls:** Use with adequate ventilation including local extraction. Ensure that eyewash stations and safety showers are close to the workstation location. Follow standard laboratory practices.
- **Individual protection measures:** Wash hands thoroughly after handling chemical products and before eating, smoking or using the restroom. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Eye/face protection: Wear approved safety goggles.

Skin/hand protection: Handle with protective gloves, plastic or rubber. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body protection: Wear suitable protective clothing as protection against splashing or contamination.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved.

Respiratory protection: In case of inadequate ventilation, use a suitable respirator. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. Physical and Chemical Properties:

▪ Appearance: Lyophilized white powder or clear liquid.	▪ Upper/lower flammability or explosive limits: Not available.
▪ Odor: Little to none.	▪ Vapor pressure/density: Not available.
▪ Odor threshold: Not available.	▪ Relative Density: Not available.
▪ pH: Not available.	▪ Solubility in/Miscibility with Water: Not available.
▪ Melting point/freezing point: Not available.	▪ Partition coefficient: n-octanol/water: Not available.
▪ Boiling point/Boiling range: Not available.	▪ Auto igniting: Product is not self-igniting.
▪ Flash point: Not available.	▪ Decomposition temperature: Not available.
▪ Evaporation rate: Not available.	▪ Viscosity: Not available.
▪ Flammability: Not available.	

10. Stability and Reactivity:

- **Reactivity:** This product contains low concentrations of Sodium Azide <0.1% (w/w). Sodium Azide can form explosive compounds with heavy metals which, with repeated contact with lead and copper commonly found in plumbing drains may result in the buildup of shock sensitive compounds.
- **Chemical Stability:** Stable under normal ambient and storage and handling temperatures.
- **Thermal decomposition/conditions to be avoided:** No decomposition if used according to specifications.
- **Incompatible materials to be avoided:** Metals and metallic compounds.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11. Toxicological Information:

- **Acute toxicity:** Not available.
- **Skin corrosion/irritation:** Not available.
- **Serious eye damage/irritation:** Not available.

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- **Respiratory or skin sensitization:** Not available.
- **Germ cell mutagenicity:** Not available.
- **Carcinogenicity:** IARC: Not available.
- **Reproductive toxicity:** Not available.
- **Specific target organ toxicity (STOT):** Not available.
- **Specific target organ toxicity (STOT) -repeated exposure:** Not available.
- **Aspiration hazard:** Not available.
- **Information on likely routes of exposure:** Routes of entry anticipated; oral, dermal, inhalation.
- **Symptoms related to the physical, chemical and toxicological characteristics:**
 - Inhalation: Not available.
 - Ingestion: Not available.
 - Skin contact: Not available.
 - Eye contact: Not available.
- **Delayed and immediate effects and also chronic effects from short and long term exposure:**
 - Short term exposure: Potential immediate effects:** Not available. **Potential delayed effects:** Not available.
 - Long term exposure: Potential immediate effects:** Not available. **Potential delayed effects:** Not available.
- **Numerical measures of toxicity:** Not available.
- **Other Information:** Not available.

12. Ecological Information:

- **Ecotoxicity:** Not available.
- **Biodegradability:** Not available.
- **Bioaccumulative potential:** Not available.
- **Mobility in soil:** Not available.
- **Other adverse effects:** Not available.

13. Disposal Considerations:

- **Disposal methods:** Dispose of waste in accordance to applicable national, regional, or local regulations.
- **Contaminated packaging:** Dispose in the same manner as unused product.
- **Special precautions:** Dispose of small amounts of spilled material as described in section 6. Large spills must be dealt with separately by qualified disposal personnel. Avoid dispersal of spilt material to soil, waterways, drains and sewers.

14. Transportation Information:

- **ADR/RID ADN/ADNR IMDG IATA/DOT:** Not applicable.
- **UN Number:** Not applicable.
- **DOT regulations:** Not applicable.
- **Hazard class:** Not applicable.
- **Land transport ADR/RID (cross-border):** Not applicable.
- **Maritime transport IMDG:** Not applicable.
- **Marine pollutant:** Not applicable.
- **Air transport ICAO-TI and IATA-DGR:** Not applicable.
- **Transport/Additional information:** Not applicable.

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▪ **US Federal and State Regulations**

TSCA (Toxic Substances Control Act): Not applicable.

SARA 313: Not applicable.

SARA 311/312 Hazards: Not applicable.

CERCLA Reportable Quantity: Not applicable.

California Proposition 65: Not applicable.

▪ **European Union**

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

16. Other Information:

- **Notice to reader:** To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.