

# SAFETY DATA SHEET (SDS)



**Product Name:** *Label IT*® Nucleic Acid Labeling Kits

**Product Number:** MIR 3100, MIR 3125, MIR 3200, MIR 3225, MIR 3300, MIR 3325, MIR 3400, MIR 3425, MIR 3600, MIR 3625, MIR 3700, MIR 3725, MIR 3800, MIR 3825, MIR 4100, MIR 4125, MIR 7100, MIR 7125

**Revision Date:** MAR 09 2017

**Print Date:** MAR 09 2020

This kit contains the following components. The required Safety Data Sheets for identified hazardous components are appended.

- *Label IT*® Labeling Reagent
- Reconstitution Solution
- 10X Labeling Buffer A
- Denaturation Reagent D1
- Neutralization Buffer N1
- Spin Columns

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**1.1. Product Name:** *Label* IT® Labeling Reagent

**1.2. Product Numbers:** Part of MIR 3100, 3125, 3200, 3225, 3300, 3325, 3400, 3425, 3600, 3625, 3700, 3725, 3800, 3825, 3900, 3925, 4100, 4125, 6510, 6512, 6513, 6514, 6520, 6522, 6523, 6524, 7020, 7021, 7022, 7023, 7024, 7025, 7100, 7125, 7212, 7213, 7214, 7215, 7216, 7217, 8010, 8050, 8105, 8125, 8205, 8225, 8710, 8750, 8810, 8850, 9305, 9325, 9410, 9450, 9510, 9550, 9610, 9650

**1.3. Identified Product Use:** For research use only

**1.4. Supplier Details:**

**1.4.1. Company:** Mirus Bio LLC, 545 Science Drive, Madison, WI 53711, USA

**1.4.2. Telephone:** 888.530.0801 (Toll Free within the U.S.) or +1.608.441.2852

**1.4.3. Fax:** +1.608.441.2849

**1.4.4. Emergency Phone No.:** US and Canada: 1.800.633.8253; International: +1.801.629.0667

**1.5. Precautionary Labeling:** The components of *Label* IT® Labeling Reagent (100% by weight) are potentially harmful, although the chemical, physical, and toxicological properties have not been thoroughly investigated by Mirus Bio LLC. For proper usage, *Label* IT® Labeling Reagent is dissolved in Reconstitution Solution; this Safety Data Sheet is intended to provide general guidelines about its use when reconstituted. Handle with care, and practice safe laboratory techniques.

## 2. HAZARDS IDENTIFICATION

**2.1. Classification of the substance or mixture:**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Flammable liquids (Category 4), H227

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2. GHS label elements, including precautionary statements:**

<b>Pictogram</b>	None
<b>Signal word</b>	Warning
<b>Hazard statement(s)</b>	
H227	Combustible liquid.
<b>Precautionary statement(s)</b>	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280	Wear protective gloves.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/ container to an approved waste disposal plant.

**2.3. Other Hazards which do not result in the classification or are not covered by GHS:** None

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**3.1. Substances**

Chemical Name	CAS-No	EINECS-No	Common Name(s)	Volume%
DMSO	67-68-5	200-664-3	Methyl sulfoxide	100

**Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance:** None

#### **4. FIRST AID MEASURES**

##### **4.1. Description of first aid measures:**

###### **General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

###### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

###### **In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

###### **In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

###### **If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

##### **4.2. Most important symptoms/effects, acute and delayed**

See sections 2 and 11 (hazard and toxicological information) for the most important symptoms and effects.

##### **4.3. Indication of immediate medical attention and special treatment needed, if necessary**

No data available

#### **5. FIRE-FIGHTING MEASURES**

##### **5.1. Extinguishing media**

###### **5.1.1. Suitable Extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

###### **5.1.2. Unsuitable extinguishing media**

None

##### **5.2. Specific hazards arising from the substance or mixture**

Carbon oxides, Sulphur oxides

##### **5.3. Special protective equipment and precautions for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary

##### **5.4. Further information:** Use water spray to cool unopened containers.

#### **6. ACCIDENTAL RELEASE MEASURES**

##### **6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid breathing vapors, mist or gas. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection, refer to section 8.

##### **6.2. Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 6.3. 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. Keep in suitable, closed containers for disposal.

### 6.4. References to other sections

For disposal see section 13.

## 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Avoid inhalation of vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge. Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. For precautions see section 2.2.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Hygroscopic. Storage class (TRGS 510): Combustible liquids

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters e.g. occupational exposure limit values or biological limit values.

Contains no substances with occupational exposure limit values.

### 8.2. Appropriate engineering controls.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical / ventilating / lighting / equipment.

### 8.3. Individual protection measures, such as personal protective equipment.

Personal protective equipment:	Avoid all unnecessary exposure.
Materials for protective clothing:	Wear nitrile rubber gloves with a minimal layer thickness of 0.2 mm.
Hand protection:	Always wear gloves.
Eye protection:	Safety glasses with side shields.
Skin and body protection:	Protective clothing.
Respiratory protection:	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Other information:	Do not allow product to enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. **Appearance (physical state, color etc.):** Form: liquid  
Color: colorless

9.2. **Odor:** sulfurous

9.3. **Odor threshold:** No data available

9.4. **pH:** No data available

9.5. **Melting point/freezing point:** Melting point/range: 16 - 19 °C (61 - 66 °F)

9.6. **Initial boiling point and boiling range:** 189 °C (372 °F)

- 9.7. **Flash point:** 87 °C (189 °F) - closed cup - ASTM D 93
- 9.8. **Evaporation rate:** No data available
- 9.9. **Flammability (solid, gas):** No data available
- 9.10. **Upper/lower flammability or explosive limits:** Upper explosion limit: 42 %(V)  
Lower explosion limit: 3.5 %(V)
- 9.11. **Vapor pressure:** 0.55 hPa (0.41 mmHg) at 20 °C (68 °F)  
4 hPa (3 mmHg) at 50 °C (122 °F)
- 9.12. **Vapor density:** 2.70 - (Air = 1.0)
- 9.13. **Relative density:** 1.1 g/mL
- 9.14. **Solubility(ies):** completely miscible; alcohol soluble; Diethylether soluble
- 9.15. **Partition coefficient: n-octanol/water** log Pow: -1.349
- 9.16. **Auto-ignition temperature:** 300 - 302 °C (572 - 576 °F)
- 9.17. **Decomposition temperature:** > 190 °C (> 374 °F)
- 9.18. **Viscosity:** No data available
- 9.19. **Other information:**
- |                        |                            |
|------------------------|----------------------------|
| Surface tension        | 43.5 mN/m at 20 °C (68 °F) |
| Relative vapor density | 2.70 - (Air = 1.0)         |

## 10. STABILITY AND REACTIVITY

- 10.1. **Reactivity:** No data available
- 10.2. **Chemical stability:** Stable under recommended storage conditions.
- 10.3. **Possibility of hazardous reactions:** No data available
- 10.4. **Conditions to avoid (e.g. static discharge, shock or vibration):** Heat, flames and sparks.
- 10.5. **Incompatible materials:** Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents, Strong reducing agents
- 10.6. **Hazardous decomposition products:** Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Sulfur oxides, Sulfides, Formaldehyde. In the event of a fire: see section 5

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects:

#### Acute toxicity

LD50 Oral - Rat - 14,500 mg/kg  
LC50 Inhalation - Rat - 4 h - 40250 ppm  
LD50 Dermal - Rabbit - > 5,000 mg/kg

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitization

No data available

#### Germ cell mutagenicity

Mutagenic effects have occurred in experimental animals.

#### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or

anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

Experiments have shown reproductive toxicity effects on laboratory animals.

Developmental effects have occurred in experimental animals.

Teratogenic effects have occurred in experimental animals.

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**12. ECOLOGICAL INFORMATION**

**12.1. Ecotoxicity (aquatic and terrestrial, where available):** Do not empty into drains

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 34,000 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - 35,000 mg/l - 96 h
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Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 24,600 mg/l - 48 h (OECD Test Guideline 202)
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Toxicity to algae	EC50 - Pseudokirchneriella subcapitata (green algae) - 17,000 mg/l - 72 h (OECD Test Guideline 201)
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**12.2. Persistence and degradability:**

Biodegradability	Result: 31 % - According to the results of tests of biodegradability this product is not readily biodegradable. (OECD Test Guideline 301D)
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**12.3. Bioaccumulative potential:** No data available

**12.4. Mobility in the soil:** No data available

**12.5. Other adverse effects:** No data available

**13. DISPOSAL CONSIDERATIONS**

**13.1. Waste Treatment Recommendations:**

Remove waste in accordance with local and/or national regulations. Hazardous waste should not be mixed with other waste or different types of hazardous waste if mixing leads to pollution or increased difficulty in properly disposing of the waste. All entities that store, transport or handle hazardous waste should take the necessary measures to prevent risks of pollution or damage to people or animals.

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

#### 14. TRANSPORT INFORMATION

- 14.1. **UN number:** none
- 14.2. **UN proper shipping name:** Combustible liquid, n.o.s. (Dimethyl sulfoxide) (Dimethyl sulfoxide)
- 14.3. **Transport hazard class(es):** none
- 14.4. **Packing group, if applicable:** none

**Special precautions which a user needs to be aware of, or needs to comply with, in connection with the transport or conveyance within or outside their premises:** This product is not classified as hazardous according to DOT, IMDG, and IATA regulations.

#### 15. REGULATORY INFORMATION

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

**SARA 302/313 Components**

SARA 302: This material is not subject to the reporting requirements of SARA Title III, Section 302.

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Fire hazard, Chronic Health Hazard

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

#### 16. OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3.**

Flam. Liq.	Flammable liquids
H227	Combustible liquid.

**HMIS Rating**

Health hazard:	0
Chronic Health Hazard:	*
Flammability:	2
Physical Hazard	0

**NFPA Rating**

Health hazard:	0
Fire Hazard:	2
Reactivity Hazard:	0

**Disclaimer:** Mirus Bio LLC believes that the information on this MSDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, Mirus Bio LLC does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling.

## 1. PRODUCT AND COMPANY IDENTIFICATION

**1.1. Product Name:** Reconstitution Solution

**1.2. Product Numbers:** Part of MIR 3100, 3125, 3200, 3225, 3300, 3325, 3400, 3425, 3600, 3625, 3700, 3725, 3800, 3825, 3900, 39254100, 4125, , 6510, 6512, 6513, 6514, 6520, 6522, 6523, 6524, 7020, 7021, 7022, 7023, 7024, 7025, 7212, 7213, 7214, 7215, 7216, 7217, 8010, 8050, 8105, 8125, 8205, 8225, 8710, 8810, 8750, 8850, 9305, 9325, 9410, 9450, 9510, 9550, 9610, 9650

**1.3. Identified Product Use:** For research use only

**1.4. Supplier Details:**

**1.4.1. Company:** Mirus Bio LLC, 545 Science Drive, Madison, WI 53711, USA

**1.4.2. Telephone:** 888.530.0801 (Toll Free within the U.S.) or +1.608.441.2852

**1.4.3. Fax:** +1.608.441.2849

**1.4.4. Emergency Phone No.:** US and Canada: 1.800.633.8253; International: +1.801.629.0667

**1.5. Precautionary Labeling:** The components of Reconstitution Solution (100% by volume) are potentially harmful, although the chemical, physical, and toxicological properties have not been thoroughly investigated by Mirus Bio LLC. Handle with care, and practice safe laboratory techniques.

## 2. HAZARDS IDENTIFICATION

**2.1. Classification of the substance or mixture:**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Flammable liquids (Category 4), H227

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2. GHS label elements, including precautionary statements:**

**Pictogram** None

**Signal word** Warning

**Hazard statement(s)**

H227 Combustible liquid.

**Precautionary statement(s)**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P280 Wear protective gloves.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P403 + P235 Store in a well-ventilated place. Keep cool.

P501 Dispose of contents/ container to an approved waste disposal plant.

**2.3. Other Hazards which do not result in the classification or are not covered by GHS:** None

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**3.1. Substances**

Chemical Name	CAS-No	EINECS-No	Common Name(s)	Weight %
DMSO	67-68-5	200-664-3	Methyl sulfoxide	100



**Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance:** None

#### 4. FIRST AID MEASURES

##### 4.1. Description of first aid measures:

###### **General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

###### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

###### **In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

###### **In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

###### **If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

##### 4.2. Most important symptoms/effects, acute and delayed

See sections 2 and 11 (hazard and toxicological information) for the most important symptoms and effects.

##### 4.3. Indication of immediate medical attention and special treatment needed, if necessary

No data available

#### 5. FIRE-FIGHTING MEASURES

##### 5.1. Extinguishing media

###### 5.1.1. Suitable Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

###### 5.1.2. Unsuitable extinguishing media

None

##### 5.2. Specific hazards arising from the substance or mixture

Carbon oxides, Sulphur oxides

##### 5.3. Special protective equipment and precautions for firefighters

Wear self-contained breathing apparatus for firefighting if necessary

##### 5.4. Further information: Use water spray to cool unopened containers.

#### 6. ACCIDENTAL RELEASE MEASURES

##### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection, refer to section 8.

##### 6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 6.3. 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. Keep in suitable, closed containers for disposal.

### 6.4. References to other sections

For disposal see section 13.

## 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Avoid inhalation of vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge. Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. For precautions see section 2.2.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Hygroscopic. Storage class (TRGS 510): Combustible liquids

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters e.g. occupational exposure limit values or biological limit values.

Contains no substances with occupational exposure limit values.

### 8.2. Appropriate engineering controls.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical / ventilating / lighting / equipment.

### 8.3. Individual protection measures, such as personal protective equipment.

Personal protective equipment:	Avoid all unnecessary exposure.
Materials for protective clothing:	Wear nitrile rubber gloves with a minimal layer thickness of 0.2 mm.
Hand protection:	Always wear gloves.
Eye protection:	Safety glasses with side shields.
Skin and body protection:	Protective clothing.
Respiratory protection:	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Other information:	Do not allow product to enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. **Appearance (physical state, color etc.):** Form: liquid  
Color: colorless

9.2. **Odor:** sulfurous

9.3. **Odor threshold:** No data available

9.4. **pH:** No data available

9.5. **Melting point/freezing point:** Melting point/range: 16 - 19 °C (61 - 66 °F)

9.6. **Initial boiling point and boiling range:** 189 °C (372 °F)

9.7. **Flash point:** 87 °C (189 °F) - closed cup - ASTM D 93

- 9.8. **Evaporation rate:** No data available
- 9.9. **Flammability (solid, gas):** No data available
- 9.10. **Upper/lower flammability or explosive limits:** Upper explosion limit: 42 %(V)  
Lower explosion limit: 3.5 %(V)
- 9.11. **Vapor pressure:** 0.55 hPa (0.41 mmHg) at 20 °C (68 °F)  
4 hPa (3 mmHg) at 50 °C (122 °F)
- 9.12. **Vapor density:** 2.70 - (Air = 1.0)
- 9.13. **Relative density:** 1.1 g/mL
- 9.14. **Solubility(ies):** completely miscible; alcohol soluble; Diethylether soluble
- 9.15. **Partition coefficient: n-octanol/water** log Pow: -1.349
- 9.16. **Auto-ignition temperature:** 300 - 302 °C (572 - 576 °F)
- 9.17. **Decomposition temperature:** > 190 °C (> 374 °F)
- 9.18. **Viscosity:** No data available
- 9.19. **Other information:**
- |                        |                            |
|------------------------|----------------------------|
| Surface tension        | 43.5 mN/m at 20 °C (68 °F) |
| Relative vapor density | 2.70 - (Air = 1.0)         |

## 10. STABILITY AND REACTIVITY

- 10.1. **Reactivity:** No data available
- 10.2. **Chemical stability:** Stable under recommended storage conditions.
- 10.3. **Possibility of hazardous reactions:** No data available
- 10.4. **Conditions to avoid (e.g. static discharge, shock or vibration):** Heat, flames and sparks.
- 10.5. **Incompatible materials:** Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents, Strong reducing agents
- 10.6. **Hazardous decomposition products:** Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Sulfur oxides, Sulfides, Formaldehyde. In the event of a fire: see section 5

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects:

#### Acute toxicity

LD50 Oral - Rat - 14,500 mg/kg  
LC50 Inhalation - Rat - 4 h - 40250 ppm  
LD50 Dermal - Rabbit - > 5,000 mg/kg

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitization

No data available

#### Germ cell mutagenicity

Mutagenic effects have occurred in experimental animals.

#### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.  
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

Experiments have shown reproductive toxicity effects on laboratory animals.

Developmental effects have occurred in experimental animals.

Teratogenic effects have occurred in experimental animals.

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**12. ECOLOGICAL INFORMATION**

**12.1. Ecotoxicity (aquatic and terrestrial, where available):** Do not empty into drains

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 34,000 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - 35,000 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 24,600 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	EC50 - Pseudokirchneriella subcapitata (green algae) - 17,000 mg/l - 72 h (OECD Test Guideline 201)

**12.2. Persistence and degradability:**

Biodegradability	Result: 31 % - According to the results of tests of biodegradability this product is not readily biodegradable. (OECD Test Guideline 301D)
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**12.3. Bioaccumulative potential:** No data available

**12.4. Mobility in the soil:** No data available

**12.5. Other adverse effects:** No data available

**13. DISPOSAL CONSIDERATIONS**

**13.1. Waste Treatment Recommendations:**

Remove waste in accordance with local and/or national regulations. Hazardous waste should not be mixed with other waste or different types of hazardous waste if mixing leads to pollution or increased difficulty in properly disposing of the waste. All entities that store, transport or handle hazardous waste should take the necessary measures to prevent risks of pollution or damage to people or animals.

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

#### 14. TRANSPORT INFORMATION

- 14.1. **UN number:** none  
14.2. **UN proper shipping name:** Combustible liquid, n.o.s. (Dimethyl sulfoxide) (Dimethyl sulfoxide)  
14.3. **Transport hazard class(es):** none  
14.4. **Packing group, if applicable:** none

**Special precautions which a user needs to be aware of, or needs to comply with, in connection with the transport or conveyance within or outside their premises:** This product is not classified as hazardous according to DOT, IMDG, and IATA regulations.

#### 15. REGULATORY INFORMATION

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

**SARA 302/313 Components**

SARA 302: This material is not subject to the reporting requirements of SARA Title III, Section 302.

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Fire hazard, Chronic Health Hazard

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

#### 16. OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3.**

Flam. Liq.	Flammable liquids
H227	Combustible liquid.

**HMIS Rating**

Health hazard:	0
Chronic Health Hazard:	*
Flammability:	2
Physical Hazard	0

**NFPA Rating**

Health hazard:	0
Fire Hazard:	2
Reactivity Hazard:	0

**Disclaimer:** Mirus Bio LLC believes that the information on this MSDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, Mirus Bio LLC does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling.

## 1. PRODUCT AND COMPANY IDENTIFICATION

**1.1. Product Name:** 10X Labeling Buffer A

**1.2. Product Numbers:** Part of MIR 3100, 3125, 3200, 3225, 3300, 3325, 3400, 3425, 3600, 3625, 3700, 3725, 3800, 3825, 3900, 3925, 4100, 4125, 6510, 6512, 6513, 6514, 6520, 6522, 6523, 6524, 7020, 7021, 7022, 7023, 7024, 7025, 7212, 7213, 7214, 7215, 7216, 7217

**1.3. Identified Product Use:** For research use only

**1.4. Supplier Details:**

**1.4.1. Company:** Mirus Bio LLC, 545 Science Drive, Madison, WI 53711, USA

**1.4.2. Telephone:** 888.530.0801 (Toll Free within the U.S.) or +1.608.441.2852

**1.4.3. Fax:** +1.608.441.2849

**1.4.4. Emergency Phone No.:** US and Canada: 1.800.633.8253; International: +1.801.629.0667

**1.5. Precautionary Labeling:** The components of 10X Labeling Buffer A (< 5.5% by weight) are potentially harmful, although the chemical, physical, and toxicological properties have not been thoroughly investigated by Mirus Bio LLC. Handle with care, and practice safe laboratory techniques.

## 2. HAZARDS IDENTIFICATION

**2.1. Classification of the substance or mixture:**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2. GHS label elements, including precautionary statements:**



**Pictogram**

**Signal word**

Warning

**Hazard statement(s)**

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H335

May cause respiratory irritation.

**Precautionary statement(s)**

P261

Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264

Wash skin thoroughly after handling.

P271

Use only outdoors or in a well-ventilated area.

P280

Wear protective gloves/ eye protection/ face protection.

P302 + P352

IF ON SKIN: Wash with plenty of soap and water.

P304 + P340

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338

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

P312

Call a POISON CENTER or doctor/ physician if you feel unwell.

P321

Specific treatment (see supplemental first aid instructions for MOPS).

P332 + P313

If skin irritation occurs: Get medical advice/ attention.

P337 + P313  
P362  
P403 + P233  
P405  
P501

If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.  
Store in a well-ventilated place. Keep container tightly closed.  
Store locked up.  
Dispose of contents/ container to an approved waste disposal plant.

**2.3. Other Hazards which do not result in the classification or are not covered by GHS:** None

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Substances

Chemical Name	CAS-No	EINECS-No	Common Name(s)	Weight %
MOPS	1132-61-2	214-478-5	3-(N-Morpholino)propanesulfonic acid 4-Morpholinepropanesulfonic acid	5.5% w/v
Water	7732-18-5	231-791-2	n/a	100% v/v

**Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance:** None

### 4. FIRST AID MEASURES

#### 4.1. Description of first aid measures:

##### **General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

##### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

##### **In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

##### **In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

##### **If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

#### 4.2. Most important symptoms/effects, acute and delayed

See sections 2 and 11 (hazard and toxicological information) for the most important symptoms and effects.

#### 4.3. Indication of immediate medical attention and special treatment needed, if necessary

No data available

### 5. FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing media

##### 5.1.1. Suitable Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

##### 5.1.2. Unsuitable extinguishing media: None

#### 5.2. Specific hazards arising from the substance or mixture

Carbon oxides, nitrogen oxides (NO<sub>x</sub>), Sulphur oxides

#### 5.3. Special protective equipment and precautions for firefighters

Wear self-contained breathing apparatus for firefighting if necessary

#### 5.4. Further information: No data available

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection, refer to section 8.

### 6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 6.3. Methods and Materials for Containment and cleaning up

Contain spillage, and then collect and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.

### 6.4. References to other sections

For disposal see section 13.

## 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Avoid inhalation of vapor or mist. Avoid contact with skin and eyes. For precautions see section 2.2.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters e.g. occupational exposure limit values or biological limit values.

Contains no substances with occupational exposure limit values.

### 8.2. Appropriate engineering controls.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

### 8.3. Individual protection measures, such as personal protective equipment.

Personal protective equipment:	Avoid all unnecessary exposure.
Materials for protective clothing:	Wear appropriate protective gloves to prevent skin exposure
Hand protection:	Always wear gloves.
Eye protection:	Tightly fitting safety glasses with side shields.
Skin and body protection:	Protective clothing.
Respiratory protection:	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Other information:	Do not allow product to enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. **Appearance (physical state, color etc.):** Form: liquid

9.2. **Odor:** No data available

9.3. **Odor threshold:** No data available

9.4. **pH:** No data available

9.5. **Melting point/freezing point:** No data available)

9.6. **Initial boiling point and boiling range:** No data available

9.7. **Flash point:** No data available

9.8. **Evaporation rate:** No data available

9.9. **Flammability (solid, gas):** No data available



- 9.10. **Upper/lower flammability or explosive limits:** No data available
- 9.11. **Vapor pressure:** No data available
- 9.12. **Vapor density:** No data available
- 9.13. **Relative density:** No data available
- 9.14. **Solubility(ies):** No data available
- 9.15. **Partition coefficient: n-octanol/water** No data available
- 9.16. **Auto-ignition temperature:** No data available
- 9.17. **Decomposition temperature:** No data available
- 9.18. **Viscosity:** No data available
- 9.19. **Other information:** No data available

## 10. STABILITY AND REACTIVITY

- 10.1. **Reactivity:** No data available
- 10.2. **Chemical stability:** Stable under recommended storage conditions.
- 10.3. **Possibility of hazardous reactions:** No data available
- 10.4. **Conditions to avoid (e.g. static discharge, shock or vibration):** No data available
- 10.5. **Incompatible materials:** Strong oxidizing agents, Strong bases
- 10.6. **Hazardous decomposition products:** No data available. In the event of a fire: see section 5

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects:

#### **Acute toxicity**

LD50 Oral - Rat - >2,000 mg/kg

LC50 Inhalation – no data available

LD50 Dermal – no data available

**Skin corrosion/irritation:** No data available

**Serious eye damage/eye irritation:** No data available

**Respiratory or skin sensitization:** No data available

**Germ cell mutagenicity:** No data available

#### **Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity:** No data available

**Specific target organ toxicity - single exposure:** Inhalation - May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure:** No data available

**Aspiration hazard:** No data available

## 12. ECOLOGICAL INFORMATION

### 12.1. Ecotoxicity (aquatic and terrestrial, where available): Do not empty into drains

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - >100 mg/l - 48 h

Toxicity to fish: No data available

Toxicity to algae: No data available

**12.2. Persistence and degradability:** Biodegradability – No data available

**12.3. Bioaccumulative potential:** No data available

**12.4. Mobility in the soil:** No data available

**12.5. Other adverse effects:** No data available

### 13. DISPOSAL CONSIDERATIONS

#### 13.1. Waste Treatment Recommendations:

Remove waste in accordance with local and/or national regulations. Hazardous waste should not be mixed with other waste or different types of hazardous waste if mixing leads to pollution or increased difficulty in properly disposing of the waste. All entities that store, transport or handle hazardous waste should take the necessary measures to prevent risks of pollution or damage to people or animals.

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

### 14. TRANSPORT INFORMATION

**14.1. UN number:** not a dangerous good

**14.2. UN proper shipping name:** not a dangerous good

**14.3. Transport hazard class(es):** not a dangerous good

**14.4. Packing group, if applicable:** not a dangerous good

**Special precautions which a user needs to be aware of, or needs to comply with, in connection with the transport or conveyance within or outside their premises:** This product is not classified as hazardous according to DOT, IMDG, and IATA regulations.

### 15. REGULATORY INFORMATION

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

#### **SARA 302/313 Components**

SARA 302: This material is not subject to the reporting requirements of SARA Title III, Section 302.

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

#### **SARA 311/312 Hazards**

Acute Health Hazard

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

### 16. OTHER INFORMATION

#### **Full text of H-Statements referred to under sections 2 and 3.**

Eye Irrit.

Eye irritation

H315

Causes skin irritation.

H319

Causes serious eye irritation.

H335

May cause respiratory irritation.

Skin Irrit.

Skin irritation

STOT SE

Specific target organ toxicity - single exposure

**HMIS Rating**

Health hazard: 2

Chronic Health Hazard: \*

Flammability: 0

Physical Hazard 0

**NFPA Rating**

Health hazard: 2

Fire Hazard: 0

Reactivity Hazard: 0

**Disclaimer:** Mirus Bio LLC believes that the information on this MSDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, Mirus Bio LLC does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling.

## 1. PRODUCT AND COMPANY IDENTIFICATION

**1.1. Product Name:** Denaturation Buffer D1

**1.2. Product Numbers:** Part of MIR 3100, 3125, 3200, 3225, 3300, 3325, 3400, 3425, 3600, 3625, 3700, 3725, 3800, 3825, 3900, 3925, 4100, 4125, 6510, 6512, 6513, 6514, 6520, 6522, 6523, 6524, 8010, 8050, 8105, 8125, 8205, 8225, 8710, 8750, 8810, 8850

**1.3. Identified Product Use:** For research use only

**1.4. Supplier Details:**

**1.4.1. Company:** Mirus Bio LLC, 545 Science Drive, Madison, WI 53711, USA

**1.4.2. Telephone:** 888.530.0801 (Toll Free within the U.S.) or +1.608.441.2852

**1.4.3. Fax:** +1.608.441.2849

**1.4.4. Emergency Phone No.:** US and Canada: 1.800.633.8253; International: +1.801.629.0667

**1.5. Precautionary Labeling:** The components of Denaturation Buffer D1 (< 12% by weight) are potentially harmful, although the chemical, physical, and toxicological properties have not been thoroughly investigated by Mirus Bio LLC. Handle with care, and practice safe laboratory techniques.

## 2. HAZARDS IDENTIFICATION

**2.1. Classification of the substance or mixture:**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Corrosive to metals (Category 1), H290

Skin corrosion (Category 1A), H314

Serious eye damage (Category 1), H318

Acute aquatic toxicity (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2. GHS label elements, including precautionary statements:**



**Pictogram**

**Signal word**

Danger

**Hazard statement(s)**

H290

May be corrosive to metals.

H314 + H318

Causes severe skin burns and eye damage.

H402

Harmful to aquatic life.

**Precautionary statement(s)**

P234

Keep only in original container.

P264

Wash skin thoroughly after handling.

P273

Avoid release to the environment.

P280

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

P301 + P330 + P331

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353

IF ON SKIN (or hair): Remove/ Take off immediately all contaminated.

P304 + P340 IF INHALED:

Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.
P321	Specific treatment (see first aid instructions for NaOH).
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P405	Store locked up.
P406	Store in corrosive resistant stainless steel container with a resistant inner liner.
P501	Dispose of contents/ container to an approved waste disposal plant.

**2.3. Other Hazards which do not result in the classification or are not covered by GHS:** None

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Substances (Mixtures)

Chemical Name	CAS-No	EINECS-No	Common Name(s)	Weight %
Sodium Hydroxide	1310-73-2	215-185-5	NaOH	12% w/v
Water	7732-18-5	231-791-2	n/a	88% v/v

**Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance:** None

### 4. FIRST AID MEASURES

#### 4.1. Description of first aid measures:

##### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

##### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

##### In case of skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a physician.

##### In case of eye contact

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

##### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

#### 4.2. Most important symptoms/effects, acute and delayed

See sections 2 and 11 (hazard and toxicological information) for the most important symptoms and effects.

#### 4.3. Indication of immediate medical attention and special treatment needed, if necessary

No data available

### 5. FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing media

##### 5.1.1. Suitable Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

##### 5.1.2. Unsuitable extinguishing media: None

#### 5.2. Specific hazards arising from the substance or mixture

Sodium oxides

**5.3. Special protective equipment and precautions for firefighters**  
Wear self-contained breathing apparatus for firefighting if necessary

**5.4. Further information:** None

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection, refer to section 8.

### 6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 6.3. Methods and Materials for Containment and cleaning up

Soak up with inert absorbent material (e.g. vermiculite, sand or earth), and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

### 6.4. References to other sections

For disposal see section 13.

## 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Avoid inhalation of vapor or mist. Avoid contact with skin and eyes. For precautions see section 2.2.

### 7.2. Conditions for safe storage, including any incompatibilities

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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters e.g. occupational exposure limit values or biological limit values.

Chemical Name	ACGIH (Threshold limit)	NIOSH (Recommended exposure limits)	OSHA (Occupational exposure limits)
Sodium hydroxide	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	2mg/m <sup>3</sup>
Water	none	none	none

### 8.2. Appropriate engineering controls.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

### 8.3. Individual protection measures, such as personal protective equipment.

Personal protective equipment:	Avoid all unnecessary exposure.
Materials for protective clothing:	Wear appropriate protective gloves to prevent skin exposure
Hand protection:	Always wear gloves.
Eye protection:	Tightly fitting safety glasses with side shields.
Skin and body protection:	Protective clothing.

Respiratory protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Other information: Do not allow product to enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

- 9.1. **Appearance (physical state, color etc.):** Form: liquid  
Color: colorless
- 9.2. **Odor:** No data available
- 9.3. **Odor threshold:** No data available
- 9.4. **pH:** No data available
- 9.5. **Melting point/freezing point:** No data available
- 9.6. **Initial boiling point and boiling range:** No data available
- 9.7. **Flash point:** No data available
- 9.8. **Evaporation rate:** No data available
- 9.9. **Flammability (solid, gas):** No data available
- 9.10. **Upper/lower flammability or explosive limits:** No data available
- 9.11. **Vapor pressure:** No data available
- 9.12. **Vapor density:** 2 No data available
- 9.13. **Relative density:** No data available
- 9.14. **Solubility(ies):** No data available
- 9.15. **Partition coefficient:** No data available
- 9.16. **Auto-ignition temperature:** No data available
- 9.17. **Decomposition temperature:** No data available
- 9.18. **Viscosity:** No data available
- 9.19. **Other information:** No data available

## 10. STABILITY AND REACTIVITY

- 10.1. **Reactivity:** No data available
- 10.2. **Chemical stability:** Stable under recommended storage conditions.
- 10.3. **Possibility of hazardous reactions:** No data available
- 10.4. **Conditions to avoid (e.g. static discharge, shock or vibration):** Heat, flames and sparks.
- 10.5. **Incompatible materials:** Strong oxidizing agents, Strong acids, Organic materials
- 10.6. **Hazardous decomposition products:** Carbon monoxide, carbon dioxide, toxic fumes of sodium oxide, sodium peroxide fumes. In the event of a fire: see section 5

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects:

#### Acute toxicity

No data available

#### Skin corrosion/irritation

Draize test, rabbit, skin: 500 mg/24H Severe;

#### Serious eye damage/eye irritation

Draize test, rabbit, eye: 400 ug	Mild
Draize test, rabbit, eye: 1%	Severe
Draize test, rabbit, eye: 50 ug/24H	Severe
Draize test, rabbit, eye: 1 mg/24H	Severe

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**Additional Information:** Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

**12. ECOLOGICAL INFORMATION**

**12.1. Ecotoxicity (aquatic and terrestrial, where available):** Do not empty into drains

Fish: Carp: 180ppm (LC100); 24H

**12.2. Persistence and degradability:** No data available

**12.3. Bioaccumulative potential:** No data available

**12.4. Mobility in the soil:** No data available

**12.5. Other adverse effects:** No data available

**13. DISPOSAL CONSIDERATIONS****13.1. Waste Treatment Recommendations:**

Remove waste in accordance with local and/or national regulations. Hazardous waste should not be mixed with other waste or different types of hazardous waste if mixing leads to pollution or increased difficulty in properly disposing of the waste. All entities that store, transport or handle hazardous waste should take the necessary measures to prevent risks of pollution or damage to people or animals.

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.



#### 14. TRANSPORT INFORMATION

- 14.1. UN number: 1824
- 14.2. UN proper shipping name: Sodium hydroxide solution
- 14.3. Transport hazard class(es): 8
- 14.4. Packing group, if applicable: III

Covers specifications required for DOT(US), IMDG, and IATA.

#### 15. REGULATORY INFORMATION

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

##### **SARA 302/313 Components**

SARA 302: This material is not subject to the reporting requirements of SARA Title III, Section 302.

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

##### **SARA 311/312 Hazards**

Acute health hazards

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

#### 16. OTHER INFORMATION

##### **Full text of H-Statements referred to under sections 2 and 3.**

Met. Corr.	Corrosive to metals
Skin Corr.	Skin corrosion

##### **HMIS Rating**

Health hazard:	3
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

##### **NFPA Rating**

Health hazard:	3
Fire Hazard:	0
Reactivity Hazard:	0

**Disclaimer:** Mirus Bio LLC believes that the information on this MSDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, Mirus Bio LLC does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling.

## 1. PRODUCT AND COMPANY IDENTIFICATION

**1.1. Product Name:** Neutralization Buffer N1

**1.2. Product Numbers:** Part of MIR 3100, 3125, 3200, 3225, 3300, 3325, 3400, 3425, 3600, 3625, 3700, 3725, 3800, 3825, 3900, 3925, 4100, 4125, MIR 6510, 6512, 6513, 6514, 6520, 6522, 6523, 6524, MIR 8010, 8050, 8105, 8125, 8205, 8225, 8710, 8750, 8810, 8850

**1.3. Identified Product Use:** For research use only

**1.4. Supplier Details:**

**1.4.1. Company:** Mirus Bio LLC, 545 Science Drive, Madison, WI 53711, USA

**1.4.2. Telephone:** 888.530.0801 (Toll Free within the U.S.) or +1.608.441.2852

**1.4.3. Fax:** +1.608.441.2849

**1.4.4. Emergency Phone No.:** US and Canada: 1.800.633.8253; International: +1.801.629.0667

**1.5. Precautionary Labeling:** The components of Neutralization Buffer N1 (< 33% by weight) are potentially harmful, although the chemical, physical, and toxicological properties have not been thoroughly investigated by Mirus Bio LLC. Handle with care, and practice safe laboratory techniques.

## 2. HAZARDS IDENTIFICATION

**2.1. Classification of the substance or mixture:**

Chemical Name	CAS-No	EINECS-No	Common Name(s)	Weight %
Hydrochloric acid	7647-01-0	231-595-7	HCl	11% v/v
Tris(hydroxymethyl)-aminomethane	77-86-1	201-064-4	Tris	12% w/v
Water	7732-18-5	231-791-2	n/a	77% v/v

### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

**CAS-No. 7647-01-0:**

Corrosive to metals (Category 1), H290

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

**CAS-No. 77-86-1:**

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2. GHS label elements, including precautionary statements:**

**CAS-No. 7647-01-0:**



**Pictogram**

**Signal word**

Danger

**Hazard statement(s)**

H290  
H314  
H335

May be corrosive to metals.  
Causes severe skin burns and eye damage.  
May cause respiratory irritation.

**Precautionary statement(s)**

P234  
P261  
P264  
P271  
P280

Keep only in original container.  
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.  
Wash skin thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301+P330+P331  
P303+P361+P353

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304+P340

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338

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

P310  
P363  
P390  
P403+P233  
P405  
P406

Immediately call a POISON CENTER or doctor/ physician.  
Wash contaminated clothing before reuse.  
Absorb spillage to prevent material damage.  
Store in a well-ventilated place. Keep container tightly closed.  
Store locked up.  
Store in corrosive resistant stainless steel container with a resistant inner liner.

P501

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

**CAS-No. 77-86-1:**



**Pictogram**

Warning

**Signal word**

**Hazard statement(s)**

H315  
H319

Causes skin irritation.  
Causes serious eye irritation.

**Precautionary statement(s)**

P264  
P280  
P302+P352  
P305+P351+P338

Wash skin thoroughly after handling.  
Wear protective gloves/ eye protection/ face protection.  
IF ON SKIN: Wash with plenty of soap and water.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332+P313  
P337+P313  
P362

If skin irritation occurs: Get medical advice/ attention.  
If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.

**2.3. Other Hazards which do not result in the classification or are not covered by GHS: None**

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Substances (Mixtures)

Chemical Name	CAS-No	EINECS-No	Common Name(s)	Weight %
Hydrochloric acid	7647-01-0	231-595-7	HCl	11% v/v
Tris(hydroxymethyl)-aminomethane	77-86-1	201-064-4	Tris	12% w/v
Water	7732-18-5	231-791-2	n/a	77% v/v

**Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance:** None

### 4. FIRST AID MEASURES

#### 4.1. Description of first aid measures:

##### **General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

##### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

##### **In case of skin contact**

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a physician.

##### **In case of eye contact**

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

##### **If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

#### 4.2. Most important symptoms/effects, acute and delayed

See sections 2 and 11 (hazard and toxicological information) for the most important symptoms and effects.

#### 4.3. Indication of immediate medical attention and special treatment needed, if necessary

No data available

### 5. FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing media

##### 5.1.1. Suitable Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

##### 5.1.2. Unsuitable extinguishing media: None

#### 5.2. Specific hazards arising from the substance or mixture

**CAS-No. 7647-01-0:** Hydrogen chloride gas

**CAS-No. 77-86-1:** Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas

#### 5.3. Special protective equipment and precautions for firefighters

Wear self-contained breathing apparatus for firefighting if necessary

#### 5.4. Further information: None

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection, refer to section 8.

### 6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 6.3. Methods and Materials for Containment and cleaning up

Soak up with inert absorbent material (e.g. vermiculite, sand or earth), and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

### 6.4. References to other sections

For disposal see section 13.

## 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Avoid inhalation of vapor or mist. Avoid contact with skin and eyes. For precautions see section 2.2.

### 7.2. Conditions for safe storage, including any incompatibilities

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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters e.g. occupational exposure limit values or biological limit values.

Chemical Name	ACGIH (Threshold limit)	NIOSH (Recommended exposure limits)	OSHA (Occupational exposure limits)
Hydrochloric Acid	2 ppm	5 ppm (7mg/m <sup>3</sup> )	5 ppm (7mg/m <sup>3</sup> )
Tris(hydroxymethyl)- aminomethane	No data available	No data available	No data available

### 8.2. Appropriate engineering controls.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

### 8.3. Individual protection measures, such as personal protective equipment.

Personal protective equipment:	Avoid all unnecessary exposure.
Materials for protective clothing:	Wear appropriate protective gloves to prevent skin exposure
Hand protection:	Always wear gloves.
Eye protection:	Tightly fitting safety glasses with side shields.
Skin and body protection:	Protective clothing.
Respiratory protection:	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Other information:	Do not allow product to enter drains.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

	Hydrochloric acid	Tris(hydroxymethyl)-aminomethane
<b>CAS No</b>	7647-01-0	77-86-1
<b>Appearance (form):</b>	Liquid	Liquid
<b>Appearance (color):</b>	Light yellow	No data available
<b>Odor:</b>	Pungent	No data available
<b>Odor threshold:</b>	No data available	No data available
<b>pH:</b>	No data available	7.5
<b>Melting point/freezing point:</b>	-30 °C (-22 °F)	No data available
<b>Initial boiling pt. and boiling range:</b>	> 100 °C (> 212 °F)	No data available
<b>Flash point:</b>	Not applicable	No data available
<b>Evaporation rate:</b>	No data available	No data available
<b>Flammability (solid, gas):</b>	No data available	No data available
<b>Upper/lower flammability or explosive limits:</b>	No data available	No data available
<b>Vapor pressure:</b>	227 hPa (170 mmHg) at 21.1 °C (70.0 °F) 547 hPa (410 mmHg) at 37.7 °C (99.9 °F)	No data available
<b>Vapor density:</b>	No data available	No data available
<b>Relative density:</b>	1.2 g/cm <sup>3</sup> at 25 °C (77 °F)	No data available
<b>Solubility(ies):</b>	Water soluble	No data available
<b>Partition coefficient:</b>	No data available	No data available
<b>Auto-ignition temperature:</b>	No data available	No data available
<b>Decomposition temperature:</b>	No data available	No data available
<b>Viscosity:</b>	No data available	No data available
<b>Other information:</b>	None	None

## 10. STABILITY AND REACTIVITY

**10.1. Reactivity:** No data available

**10.2. Chemical stability:** Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions:** No data available

**10.4. Conditions to avoid (e.g. static discharge, shock or vibration):** No data available

**10.5. Incompatible materials:**

**CAS-No. 7647-01-0:** Bases, Amines, Alkali metals, Metals, permanganates, e.g. potassium permanganate, Fluorine, metal acetylides, hexalithium disilicide

**CAS-No. 77-86-1:** Bases, Oxidizing agents, Strong oxidizing agents

**10.6. Hazardous decomposition products:** No data available. In the event of a fire: see section 5

## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects:

Component	LD50 Oral	LD50 Dermal	LD50 Inhalation
Hydrochloric acid	238 - 277 mg/kg (Rat)	5010 mg/kg (Rabbit)	1.68 mg/L (Rat) 1h
Tris(hydroxymethyl)-aminomethane	no data available	no data available	no data available

**Respiratory or skin sensitization:** No data available

**Acute toxicity:** No data available

**Skin corrosion/irritation:** Corrosive and irritating to skin

**Serious eye damage/eye irritation:** Irritating and damaging to eyes

**Germ cell mutagenicity:** No data available

#### **Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### **Reproductive toxicity**

Experiments have shown reproductive toxicity effects on laboratory animals. (Hydrochloric acid)

#### **Specific target organ toxicity - single exposure**

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation. (Hydrochloric acid)

**Specific target organ toxicity - repeated exposure:** No data available

**Aspiration hazard:** No data available

**Additional Information:** Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin (Hydrochloric acid)

## 12. ECOLOGICAL INFORMATION

**12.1. Ecotoxicity (aquatic and terrestrial, where available):** Do not empty into drains

Freshwater fish: LC50-> 282 mg/L - 96 h (Hydrochloric acid)

**12.2. Persistence and degradability:** No data available

**12.3. Bioaccumulative potential:** No data available

**12.4. Mobility in the soil:** No data available

**12.5. Other adverse effects:** No data available

## 13. DISPOSAL CONSIDERATIONS

### 13.1. Waste Treatment Recommendations:

Remove waste in accordance with local and/or national regulations. Hazardous waste should not be mixed with other waste or different types of hazardous waste if mixing leads to pollution or increased difficulty in properly disposing of the waste. All entities that store, transport or handle hazardous waste should take the necessary measures to prevent risks of pollution or damage to people or animals.

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

#### 14. TRANSPORT INFORMATION

- 14.1. UN number: 1789
- 14.2. UN proper shipping name: Hydrochloric acid
- 14.3. Transport hazard class(es): 8
- 14.4. Packing group, if applicable: II

Covers specifications required for DOT(US), IMDG, and IATA.

#### 15. REGULATORY INFORMATION

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

##### **SARA 302/313 Components**

SARA 302: This material is not subject to the reporting requirements of SARA Title III, Section 302.

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

##### **SARA 311/312 Hazards**

Acute health hazards

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.



## 16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

### CAS-No. 7647-01-0 (Hydrochloric acid):

Eye Dam.	Serious eye damage
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
Met. Corr.	Corrosive to metals
Skin Corr.	Skin corrosion
STOT SE	Specific target organ toxicity - single exposure

### HMIS Rating

Health hazard:	3
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

### NFPA Rating

Health Hazard:	3
Fire Hazard:	0
Reactivity Hazard:	0

### CAS-No. 77-86-1 (Tris(hydroxymethyl)-aminomethane):

H315	Causes skin irritation.
H319	Causes serious eye irritation.

### HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

### NFPA Rating

Health Hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

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