SAFETY DATA SHEET (SDS)

Product Name:  TransIT®-BrCa Transfection Reagent

Product Number:  MIR 5500, MIR 5504, MIR 5505, MIR 5506, MIR 5510

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1. **PRODUCT AND COMPANY IDENTIFICATION**

1.1. **Product Name:** TransIT®-BrCa Transfection Reagent

1.2. **Product Numbers:** MIR 5500, MIR 5504 MIR 5505, MIR 5506, MIR 5510

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 TransIT-BrCa Transfection Reagent (< 0.15% 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. The information included within this SDS pertains to ethanol, which is used as a solvent.

2. **HAZARDS IDENTIFICATION**

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

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

   Flammable liquids (Category 2), H225

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

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

   ![Pictogram](image)

   **Signal word** Danger

   **Hazard statement(s)**

   H225 Highly flammable liquid and vapor.
   H315 + H320 Causes skin and eye irritation
   H335 May cause respiratory irritation

   **Precautionary statement(s)**

   P210 Keep away from heat/sparks/open flames/hot surfaces - no smoking.
   P233 Keep container tightly closed.
   P240 Ground/bond container and receiving equipment.
   P241 Use explosion-proof electrical/ventilating/lighting equipment.
   P242 Use only non-sparking tools.
   P243 Take precautionary measures against static discharge.
   P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
   P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/ shower.
   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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>EINECS-No</th>
<th>Common Name(s)</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>200-578-6</td>
<td>Ethyl alcohol</td>
<td>80</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>n/a</td>
<td>20</td>
</tr>
</tbody>
</table>

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
No data available

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. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low 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 (see section 13).

6.4. **References to other sections**
For disposal see section 13.

7. **HANDLING AND STORAGE**

7.1. **Precautions for safe handling**
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition - no smoking. Take measures to prevent the buildup of electrostatic charge.
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.**

<table>
<thead>
<tr>
<th></th>
<th>USA OSHA</th>
<th>OSHA PEL (TWA) (mg/m³)</th>
<th>1900 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethanol (64-17-5)</strong></td>
<td>USA OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

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

Appropriate engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation.

Personal protective equipment: Avoid all unnecessary exposure.

Materials for protective clothing:
- **GIVE EXCELLENT RESISTANCE:** butyl rubber, viton.
- **GIVE GOOD RESISTANCE:** neoprene, tetrafluoroethylene.
- **GIVE LESS RESISTANCE:** nitrile rubber, polyethylene.
- **GIVE POOR RESISTANCE:** natural rubber, PVA, PVC.

Hand protection: Gloves.
Eye protection: Safety glasses.
Skin and body protection: Protective clothing.
Respiratory protection: Wear gas mask with filter type A if conc. in air > exposure limit.
Other information: Do not eat, drink or smoke during use.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

9.1. **Appearance (physical state, color etc.):** Form: liquid, clear
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:** -144 °C (-227.2 °F) (for 100% ethanol)

9.6. **Initial boiling point and boiling range:** 80 °C (176 °F) (for 100% ethanol)

9.7. **Flash point:** 20.0 °C (68 °F) - closed cup

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

9.9. **Flammability (solid, gas):** Flammable

9.10. **Upper/lower flammability or explosive limits:** 19%(V) / 3.3% (V) (for 100% ethanol)

9.11. **Vapor pressure:** 59.5 hPA (44.6 mmHg) at 20 °C (68 °F) (for 100% ethanol)

9.12. **Vapor density:** 1.6

9.13. **Relative density:** 0.855 g/mL at 25 °C (77 °F) (for 100% ethanol)

9.14. **Solubility(ies):** Water soluble

9.15. **Partition coefficient: n-octanol/water** No data available

9.16. **Auto-ignition temperature:** 363 °C (685 °F) (for 100% ethanol)

9.17. **Decomposition temperature:** No data available

9.18. **Viscosity:** 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: Vapors may form explosive mixture with air.

10.4. Conditions to avoid (e.g. static discharge, shock or vibration): Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5. Incompatible materials: Alkali metals, Oxidizing agents, Peroxides, Strong Inorganic Acids

10.6. Hazardous decomposition products: Other decomposition products – no data available. In the event of a fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects: Ethanol

**Acute toxicity**
LD50 Oral - Rat - 7,060 mg/kg
Remarks: Lungs, Thorax, or Respiration: Other changes.
LC50 Inhalation - Rat - 10 h - 20000 ppm
Dermal: No data available

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation - 24 h
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: Mild eye irritation - 24 h
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
Carcinogenicity - Mouse - Oral

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
Reproductive toxicity - Human - female - Oral
Effects on Newborn: Apgar score (human only). Effects on Newborn: Other neonatal measures or effects.
Effects on Newborn: Drug dependence.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Information on toxicological effects: Water
LD50 Oral - Rat - > 90000 mg/kg

Water summary: There is no data available for the teratogenic, mutagenic, or reproductive toxicity effect of water. No data available to designate as causing specific target organ toxicity through single or repeated exposure. No data available to designate as an aspiration hazard or as a respiratory skin sensitizer.

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish toxicity (ethanol):
LC50 / 96 hour Oncorhynchus mykiss (rainbow trout) > 10,000 mg/l
LC50 / 96 hour Pimephales promelas (fathead minnow) > 13,400 mg/l

Toxicity to aquatic plants (ethanol):
Growth inhibition / 96 hours Chlorella vulgaris (Fresh water algae) 1,000 mg/l

Toxicity to microorganisms (ethanol):
Toxicity Threshold / Pseudomonas putida 6,500 mg/l
Summary: Inhibition of cell multiplication begins.

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.
Recycle by distillation. Remove to an authorized waste incinerator for solvents with energy recovery. Do not discharge into surface water. May be discharged to wastewater treatment installation.
14. TRANSPORT INFORMATION

14.1. UN number: 1170
14.2. UN proper shipping name: Ethanol solutions
14.3. Transport hazard class(es): Class 3
14.4. Packing group, if applicable: Packing Group II
14.5. Environmental hazards (e.g.: Marine pollutant (Yes/No)): No
14.6. Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): DOT Quantity Limitations – Passenger/Cargo: 1L; Cargo: 60L
14.7. 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: Refer to section 8

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:

OSHA Hazards: Flammable liquid, Target Organ Effect, Irritant
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.
WHMIS Classification: B2 – Flammable and combustible material – flammable liquid
D2B – Poisonous and infectious material – other effects – Toxic
16. OTHER INFORMATION

**Full text of H-phrases: see section 16:**

<table>
<thead>
<tr>
<th>H-Phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 3 (Dermal)</td>
<td>Acute toxicity (dermal), Category 3</td>
</tr>
<tr>
<td>Acute Tox. 3 (Inhalation)</td>
<td>Acute toxicity (inhal.), Category 3</td>
</tr>
<tr>
<td>Acute Tox. 3 (Oral)</td>
<td>Acute toxicity (oral), Category 3</td>
</tr>
<tr>
<td>Carc. 1A</td>
<td>Carcinogenicity, Category 1A</td>
</tr>
<tr>
<td>Eye Irrit. 2A</td>
<td>Serious eye damage/eye irritation, Category 2A</td>
</tr>
<tr>
<td>Flam. Liq. 2</td>
<td>Flammable liquids, Category 2</td>
</tr>
<tr>
<td>Flam. Liq. 3</td>
<td>Flammable liquids, Category 3</td>
</tr>
<tr>
<td>Repr. 2</td>
<td>Reproductive toxicity, Category 2</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation, Category 2</td>
</tr>
<tr>
<td>STOT SE 1</td>
<td>Specific target organ toxicity — single exposure, Category 1</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity — Single exposure, Category 3, Narcosis</td>
</tr>
<tr>
<td>H225</td>
<td>Highly flammable liquid and vapor</td>
</tr>
<tr>
<td>H226</td>
<td>Flammable liquid and vapor</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>H336</td>
<td>May cause drowsiness or dizziness</td>
</tr>
<tr>
<td>H350</td>
<td>May cause cancer</td>
</tr>
<tr>
<td>H361</td>
<td>Suspected of damaging fertility or the unborn child</td>
</tr>
<tr>
<td>H370</td>
<td>Causes damage to organs</td>
</tr>
</tbody>
</table>

**NFPA Health Hazard:** 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

**NFPA Fire Hazard:** 3 - Liquids and solids that can be ignited under almost all ambient conditions.

**NFPA Reactivity:** 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

**HMIS III Rating**
- **Health:** 2 Moderate Hazard - Temporary or minor injury may occur
- **Flammability:** 3 Serious Hazard
- **Physical:** 1 Slight Hazard
- **Personal Protection:** D

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