



# MATERIAL SAFETY DATA SHEET

## For IPeX Immunoprecipitation of Antigen Free from Antibody

### 1. PRODUCTS AND COMPANY IDENTIFICATION

**Product Name:** IPeX kit

**Catalog Numbers:** IP-10, IP-2 and IPR-100

**Company Name & Address:** Gene Bio-Application Ltd.  
 P. O.Box 206  
 Kfar Hanagid  
 Israel  
 Tel.: +972-8-9322623  
 Fax: +972-8-9322380

**Information Number:** Please contact Gene Bio-Application Ltd. distributor in your country.

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Description

Water solutions of components listed.

Volume of each product package varies: 350-2 ml.

#### **Components in Water solution**

	<b>Concentration, M or %</b>	<b>Present in kit buffer</b>
1. Sodium Bicarbonate	0.3-0.6 M	(A)
2. Tris-Base	1.2-1.7 M	(C)
3. Dulbecco's Phosphate saline	10X	(D)
4. Potassium Chloride	0.8-1.2 M	(E)
5. Ethylenediamine-Tetraacetic acid (EDTA)	2.0-8.0 mM	(E)
6. Tris-Hcl	30-60 mM	(E)
7. Triton X-100	0.2-0.8 %	(E)
8. Glycine	1.3-1.6 M	(F)
9. Sodium Chloride	1.8-2.2 M	(E and GEB)

#### **Solid Component**

1. Sodium Borohydride	(B)
-----------------------	-----

#### List of Products Information

Product Name	Formula	Molecular Weight	Cas #	EC no
Sodium Bicarbonate	NaHCO <sub>3</sub>	84.01	144-55-8	205-633-8
Trizma Base	C <sub>4</sub> H <sub>11</sub> NO <sub>3</sub>	121.14	77-86-1	201-064-4
Dulbecco's Phosphate Buffer Saline			None	None
Potassium Chloride	KCl	74.56	7447-40-7	231-211-8
Ethylenediaminetetraacetic Acid Disodiumhydrate	C <sub>10</sub> H <sub>14</sub> N <sub>2</sub> Na <sub>2</sub> O <sub>8</sub> · 2H <sub>2</sub> O	372.24	63831-92-6	205-358-3
Trizma Hydrochloride	C <sub>4</sub> H <sub>11</sub> NO <sub>3</sub>	157.6	1185-53-1	214-684-5
Triton X-100	(C <sub>2</sub> H <sub>4</sub> O) <sub>n</sub> C <sub>14</sub> H <sub>22</sub> O		9002-93-1	None
Glycine Free Base	C <sub>2</sub> H <sub>5</sub> NO <sub>2</sub>	75.07	56-40-6	200-272-2
Sodium Chloride	NaCl	58.44	7647-14-5	231-598-3
Sodium Borohydride	NaBH <sub>4</sub>	37.83	16940-66-2	241-004-4

### 3. HAZARDS IDENTIFICATION

**Sodium Bicarbonate, Dulbecco's Phosphate saline, Potassium Chloride, Glycine and Sodium Chloride** - Not hazardous according to Directive 67/548/EC.

**Trizma Base, Ethylenediamine-Tetraacetic acid (EDTA) and Tris-Hcl** -Irritating to eyes, and skin.

**Triton X-100**- Harmful if swallowed. Risk of serious damage to eyes.

**Sodium Borohydride**- Contact with water liberates extremely flammable gases. Toxic in contact with skin and if swallowed. Very toxic by inhalation.



#### 4. FIRST AID MEASURES

##### After skin contact

**Sodium Bicarbonate, Trizma Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride** - In case of contact, immediately wash skin with soap and copious amount of water.

##### After Inhalation

**Sodium Bicarbonate, Dulbecco's Phosphate saline, Potassium Chloride, Triton X-100, Glycine and Sodium Chloride** – If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

**Trizma Base, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl and Sodium Borohydride** - If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing becomes difficult, give oxygen.

##### After eye contact

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride** – In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

##### After Ingestion

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride** - If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### 5. FIRE FIGHTING MEASURES

##### Extinguishing Media

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Glycine and Sodium Chloride** - Suitable: Water spray. Carbon dioxide, dry chemical powder or appropriate foam.

**Triton X-100**- Suitable: Water spray. Carbon dioxide, dry chemical powder or appropriate foam. Foam and water spray are effective but may cause frothing.

**Sodium Borohydride**- Reacts with water to liberate flammable and/or explosive gas. Reacts with metals to liberate flammable and/or hydrogen gas. Suitable: Dry chemical powder.

Unsuitable: Do not use water, foam, or carbon dioxide. Do not use halocarbon extinguishers.

##### Special Risks

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride** – Specific Hazard(s): Emits toxic fumes under fire conditions.

**Sodium Borohydride**- Emits toxic fumes under fire conditions. Explosion Hazards: Material readily reacts with water generating flammable and/or explosive hydrogen gas.

##### Special Protective Equipment for Firefighting

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine, Sodium Chloride and Sodium Borohydride** – Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.



## 6. ACCIDENTAL RELEASE MEASURES

### Procedure of Personal Precautions

**Sodium Bicarbonate, Dulbecco's Phosphate saline, Potassium Chloride, Glycine and Sodium Chloride**– Exercise appropriate precautions to minimize direct contact with skin or eyes.

**Trizma-Base, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl and Triton X-100 and Sodium Borohydride** - Wear chemical safety goggles, rubber boots and heavy rubber gloves.

### Personal Precaution Procedures to be Followed in Case of Leak or Spill

**Trizma-Base**- Sweep together the wetted material carefully and fill into marked, sealed containers.

**Triton X-100 and Sodium Borohydride** – Evacuate area.

### Environmental Precautions

**Potassium Chloride and Triton X-100** – Avoid contaminating sewers and waterways with this material.

### Methods for cleaning up

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine, Sodium Chloride and Sodium Borohydride**- Dry and absorb spill site and place in a bag and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete

## 7. HANDLING AND STORAGE

### Handling

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine, Sodium Chloride and**

**Sodium Borohydride** - Direction for safe handling: Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure.

### Storage

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride** - Keep tightly close.

**Sodium Borohydride**- Keep tightly close. Store in a cool dry place.

### Special Requirements

**Sodium Borohydride**- Reacts violently with water. Heat sensitive.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Engineering Controls

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride**– Safety shower and eye bath. Mechanical exhaust required.

**Sodium Borohydride**- Safety shower and eye bath. Use only in chemical fume hood.

### General Hygiene Measures

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride**– Wash thoroughly after handling.



**Potassium Chloride** and **Sodium Borohydride** - Wash thoroughly after handling. Wash contaminated clothing before reuse.

#### **Personal Protective Equipment**

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride –**

Hand Protection: Chemical protective gloves.

Eye Protection: Chemical safety goggles.

**Sodium Borohydride-** Respiratory protection: Government approved respirator.

Hand Protection: Chemical protective gloves.

Eye Protection: Chemical safety goggles.

Skin Protection: Chemical resistant apron.

### **9. PHYSICAL AND CHEMICAL PROPERTIES**

#### **Appearance and Physical State**

**Sodium Bicarbonate, Trizma-Base, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride** - Water solution colorless.

**Dulbecco's Phosphate saline-** N/A

**Sodium Borohydride** – Solid white color.

#### **Extra Detailed Information**

**Sodium Bicarbonate-** MP/MP Range: 300°C; SG/Density: 2.16 g/cm<sup>3</sup>.

**Trizma-Base-** BP/BP Range: 219-220°C at 10 mmHg; MP/MP Range: 171.2-172.30°C; Bulk Density 0.8 kg/l.

**Potassium Chloride-** BP/BP Range: 1500°C; MP/MP Range: 770°C; SG/Density: 1.98 g/cm<sup>3</sup>.

**Ethylenediamine-Tetraacetic acid (EDTA)** - MP/MP Range: 248°C.

**Tris-Hcl-** MP/MP Range: 150-152°C.

**Triton X-100-** BP/BP Range: > 200°C; Flash point: 251°C; Vapor pressure: < 1 mmHg at 20°C; SG/Density: 1.07 g/cm<sup>3</sup>; Vapor Density: > 1 g/l; Evaporation Rate: < 0.01.

**Glycine-** MP/MP Range: 240°C.

**Sodium Chloride-** BP/BP Range: 1413°C; MP/MP Range: 801°C; Vapor pressure: 1 mmHg at 865°C; SG/Density: 2.165 g/cm<sup>3</sup>.

**Sodium Borohydride** - MP/MP Range: 400°C; Explosion Limits: lower: 3.02%; SG/Density: 1.07 g/cm<sup>3</sup>.

### **10. STABILITY AND REACTIVITY**

#### **Stability**

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine, Sodium Chloride and Sodium Borohydride** - Stable, under normal handling and storage conditions.

#### **Hazardous Decomposition Products**

**Sodium Bicarbonate, Dulbecco's Phosphate saline and Triton X-100** - Carbon monoxide and Carbon dioxide.



**Trizma-Base** and **Ethylenediamine-Tetraacetic acid (EDTA)**, - Carbon monoxide, Carbon dioxide and Nitrogen oxides.

**Potassium Chloride**- Hydrogen chloride gas, Potassium oxides.

**Tris-Hcl**- Thermal decomposition may produce Carbon monoxide, Carbon dioxide, Nitrogen oxides and Hydrogen chloride gas.

**Glycine**- Carbon monoxide, Carbon dioxide, Nitrogen oxides and Ammonia.

**Sodium Chloride**- Sodium/sodium oxides and Hydrogen chloride gas.

**Sodium Borohydride**- Borane/boron oxides, sodium oxide, Hydrogen gas. Hazardous decomposition products formed upon contact with water: material readily reacts with water generating flammable and/or explosive hydrogen gas.

#### **Hazardous Polymerization**

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine, Sodium Chloride** and

**Sodium Borohydride**- will not occur

### **11. TOXICOLOGICAL INFORMATION**

**Sodium Bicarbonate**- RTECS Number: VZ0950000; Acute Toxicity: LD50 Oral Rat 4220mg/kg, Oral Mouse 3360 mg/kg; **Irritation Data:** Skin Human 30 mg 3D I, **Remarks:** Mild irritation effect; Eyes rabbit 100 mg 30S **Remarks:** Mild irritation effect. **Signs and symptoms of exposure:** Exposure to large amounts can cause: gastrointestinal disturbances. Heavy or prolonged skin exposure may result in the absorption of harmful amounts of material. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** May be harmful if inhaled. Material may be irritation to mucous membranes and upper respiratory tract. **Ingestion:** May be harmful if swallowed. **Conditions Aggravated by Exposure:** Alkalosis, an abnormal condition of increased alkalinity of the blood and tissues. **Chronic Exposure – Mutagen:** Rat 50400 mg/kg, Oral 4W, Unscheduled DNA synthesis. **Chronic Exposure – Teratogen:** Species: Mouse, Dose: 40 mg/kg, Route of Application: Intraperitoneal, Exposure time: 7D PREG, Results: specific Developmental Abnormalities: Other developmental abnormalities.

**Trizma-Base**- RTECS Number: TY2900000; Acute Toxicity: LD50 Oral Rat 5990mg/kg, Intravenous Rat 1800 mg/kg; LD50 Intravenous Mouse 1210 mg/kg. **Signs and symptoms of exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed.

**Dulbecco's Phosphate saline - Signs and symptoms of exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed.

**Potassium Chloride** - RTECS Number: TS8050000; **Acute Toxicity:** LDLO Oral Infant 938mg/kg 2D. **Remarks:**Lungs, Thorax, or Respiration: Cyanosis. Lungs, Thorax, or respiration: Other Changes. Nutritional and Gross Metabolic: Changes in: K. LDLO Oral Man 20mg/kg. **Remarks:** cardiac: Arrythmias (including changes it conduction). Gastrointestinal: Nausea or vomiting. Blood: Change in clotting factors. LD50 Oral Rat 2600 mg/kg, LD50 Intraperitoneal Rat 660 mg/kg, LD50 Intravenous Rat 142 mg/kg. **Remarks:** Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Dyspnea. LD50 Oral Mouse 1500 mg/kg, LD50 Intraperitoneal Rat 620 mg/kg, LD50 Intravenous Rat 117 mg/kg. **Irritation Data:** Eyes Rabbit 500 mg 24H, **Remarks:** Mild irritation effect. **Signs and symptoms of exposure:** Ingestion of large quantities can cause weakness, gastrointestinal irritation, and circulatory disturbances. **Route of**



**Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** May be harmful if inhaled. Material may be irritation to mucous membranes and upper respiratory tract. **Ingestion:** May be harmful if swallowed. **Target Organ-** Heart. **Chronic Exposure – Mutagen:** Rat 1500 ug/kg, Oral Unscheduled DNA synthesis. Mouse 2048 mg/L (+S9), cell type: Lymphocyte, Mutation in microorganisms. Hamster 260 MMOL/l Cell type: ovary, DNA damage. Hamster 12 gm/l Cell type: Lung, cytogenetic analysis. Hamster 140 MMOL/l Cell type: ovary, cytogenetic analysis. Hamster 180 MMOL/l Cell type: ovary, Sister chromatid exchange.

**Ethylenediamine-Tetraacetic acid (EDTA)-** RTECS Number: AH4410000; **Signs and symptoms of exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed. **Chronic Exposure – Mutagen:** Hamster 200 gm/l Cell type: Lung, cytogenetic analysis.

**Tris-Hcl- Signs and symptoms of exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed.

**Triton X-100-** RTECS Number: MD0907700; **Acute Toxicity:** LD50 Oral Rat, female 707mg/kg; LD50 Oral Rat, male 500mg/kg; LD50 Skin Rabbit, 12300mg/kg; LD50 Skin Rabbit 8000mg/kg; LD50 Oral Rat 1800mg/kg; LD50 Intravenous Mouse 1200mg/kg; **Irritation Data:** Eyes Rabbit 0.01 ml, **Remarks:** Severe irritation effect. : Skin Rabbit 0.5 ml 24H, **Remarks:** Mild irritation effect. Eyes Rabbit 0.01 ml 24H, **Remarks:** Moderate irritation effect. **Signs and symptoms of exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed. **Chronic Exposure – Mutagen:** Human 21 mg/L, cell type: Hela cell, DNA inhibition; Human 14 mg/L, cell type: Hela cell, Other mutation test system; Mouse 200 PPM, cell type: Ascites tumor, Unscheduled DNA synthesis; **Chronic Exposure – Reproductive Hazard:** Species: Rat, Dose: 65500 mg/kg, Route of application: Oral, Exposure Time: (26W PRE), Results: Maternal Effects: Ovaries, fallopian tubes. Species: Rat, Dose: 40 ml/kg, Route of application: Skin, Exposure Time: (6-15D PRE), Results: Maternal Effects: Other effects. Specific developmental abnormalities: Musculoskeletal system. Species: Rat, Dose: 5 mg/kg, Route of application: Parenteral, Exposure Time: (1D PRE), Results: Maternal Effects: Ovaries, fallopian tubes.

**Glycine-** RTECS Number: MD0907700; **Acute Toxicity:** LD50 Oral Rat, 7930 mg/kg; LD50 Subcutaneous Rat, 5200 mg/kg; LD50 Intravenous Rat, 2600 mg/kg; LD50 Oral Mouse, 4920 mg/kg; LD50 Intraperitoneal Mouse, 4450 mg/kg; LD50 Subcutaneous Mouse, 5060 mg/kg; LD50 Intravenous Mouse, 2370 mg/kg; **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** May cause eye irritation. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed. **Chronic Exposure – Mutagen:** Human 100 mg/L, cell type: Lymphocyte cell, Sister chromatid exchange.

**Sodium Chloride-** RTECS Number: VZ4725000; **Acute Toxicity:** LD50 Oral Rat, 3000 mg/kg; LD50 Inhalation Rat, > 42000 mg/m<sup>3</sup> 1H; LD50 Oral Mouse, 4000 mg/kg; LD50 Intraperitoneal Mouse, 2602mg/kg; LD50 Subcutaneous Mouse, 3 gm/kg; LD50 Intravenous Mouse, 645 mg/kg; LD50 Intracervical Mouse, 131 mg/kg; LD50 Skin Rabbit, 10000mg/kg 24H; **Irritation Data:** Skin Rabbit 50 mg 24H, **Remarks:** Mild irritation effect. Skin Rabbit 500 mg 24H, **Remarks:** Mild irritation effect. Eyes Rabbit 500 mg 24H, **Remarks:** Mild irritation effect. Eyes Rabbit 100 mg 24H, **Remarks:** Mild irritation effect. **Signs and symptoms of exposure:** Ingestion of large amounts causes vomiting and diarrhea. Dehydration and congestion may occur in internal organs. Hypertonic salt solutions can produce inflammatory reactions in the gastrointestinal tract. **Route of Exposure: Skin contact:** May cause skin irritation. **Skin Absorption:** May be harmful if absorbed through the skin. **Eye contact:** NaCl cause eye irritation in contact also can cause irritation or redness due to abrasion. **Inhalation:** Material is irritation to mucous membranes and upper respiratory tract. May be harmful if inhaled. **Ingestion:** May be harmful if swallowed. **Chronic Exposure – Mutagen:** Human 125



mmol/L, cell type: Fibroblast, DNA inhibition. Rat, Oral, 16800 mg/kg, Unscheduled DNA synthesis. Rat 400 mg/kg, Oral, Other mutation tests system. Rat 2338 mg/kg, Intraperitoneal, Cytogenetic analysis. Mouse 101 mmol/L, Cell type: Lymphocyte, DNA damage. Mouse 57200 umol/L, Cell type: Lymphocyte, Mutation in mammalian somatic cells. Hamster 4 gm/L, Cell type: Lung, Micronucleus test. Hamster 275 mmol/L, Cell type: Ovary, DNA damage. Hamster 160 mmol/L, Cell type: Ovary, Cytogenetic analysis. Hamster 7500 mg/L, Cell type: Lung, Cytogenetic analysis. **Chronic Exposure – Teratogen:** Species: Rat, Dose: 1710 mg/kg Route of application: Intraperitoneal, Exposure Time: (13D PREG) Results: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death. Specific developmental abnormalities: Musculoskeletal system. Species: Mouse, Dose: 1900 mg/kg Route of application: Subcutaneous, Exposure Time: (11D PREG) Results: Effects on Embryo or Fetus: Fetal death. Species: Mouse, Dose: 1900 mg/kg Route of application: Subcutaneous, Exposure Time: (10D PREG) Results: Specific developmental abnormalities: Musculoskeletal system. Species: Mouse, Dose: 2500 mg/kg Route of application: Subcutaneous, Exposure Time: (10D PREG) Results: Effects on embryo or fetus: Fetotoxicity. **Chronic Exposure – Reproductive Hazard:** Species: Woman, Dose: 27 mg/kg Route of application: Intraplacental, Exposure Time: (15W PREG) Results: Effects on Fertility: Abortion. Species: Rat, Dose: 145 mg/kg Route of application: Oral, Exposure Time: (7D PRE/1-22D PREG) Results: Effects on newborn: Delayed effect. Species: Rat, Dose: 56400 mg/kg Route of application: Oral, Exposure Time: (5D PRE-21D POST) Results: Maternal effect: Postpartum. Effects on newborn: Biochemical and metabolic. Species: Rat, Dose 10 g/kg Route of application: Intraperitoneal, Exposure Time: (17-20D PREG) Results: Effect on newborn: Behavioral. Species: Rat, Dose 10 g/kg Route of application: Parenteral, Exposure Time: (1D PRE) Results: Maternal effect: Ovaries, fallopian tubes. Species: Rat, Dose: 500 mg/kg Route of application: Intrauterine, Exposure Time: (4D PREG) Results: Effect on fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Species: Rat, Dose: 50 mg/kg Route of application: Intrauterine, Exposure Time: (6D PREG) Results: Effect on fertility: Post-implantation mortality (e.g., dead and/or restored implants per total number of implants). Species: Mouse, Dose: 13440 mg/kg Route of application: Subcutaneous, Exposure Time: (2-6D PREG) Results: Effect on fertility: Abortion. Species: Monkey, Dose: 6 g/kg Route of application: Intrauterine, Exposure Time: (18W PREG) Results: Effect on fertility: Abortion. Species: Horse, donkey, Dose: 480 mg/kg Route of application: Intraplacental, Exposure Time: (45D PREG) Results: Maternal effect: Other effect: Endocrine: Estrogenic. Effect on embryo or fetus: Fetal death.

**Sodium Borohydride-** RTECS Number: ED3325000; **Acute Toxicity:** LD50 Oral Rat, 162 mg/kg; Remarks: sense organs and special Senses (Nose, Eye, Ear and Taste): Eye: Other. Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. LC50 Inhalation Rat, 36 mg/m<sup>3</sup>; Remarks: sense organs and special Senses (Nose, Eye, Ear and Taste): Eye: Other. Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. LD50, Intraperitoneal, Rat 18 mg/kg, LD50, Subcutaneous, Rat 177 mg/kg, Remarks: sense organs and special Senses (Nose, Eye, Ear and Taste): Eye: Other. Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. LD50, Oral, Mouse 50 mg/kg, Remarks: sense organs and special Senses (Nose, Eye, Ear and Taste): Eye: Other. Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. LD50, Oral, Rabbit 50 mg/kg, Remarks: sense organs and special Senses (Nose, Eye, Ear and Taste): Eye: Other. Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. LD50, Skin, Rabbit 230 mg/kg, Remarks: sense organs and special Senses (Nose, Eye, Ear and Taste): Eye: Other. Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Structural or functional change in trachea or bronchi. **Signs and symptoms of exposure:** Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. **Route of Exposure: Skin contact:** Causes burns. **Skin Absorption:** Toxic if absorbed through skin. **Eye contact:** Causes burns. **Inhalation:** May be fatal if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. **Ingestion:** Toxic if swallowed.

## 12. ECOLOGICAL INFORMATION



**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Glycine, Sodium Chloride and Sodium Borohydride** - No data available.

**Triton X-100**- Elimination: 90%. **Ecotoxicological Effects:** Test type: IC50 Algae. Species: Other microorganisms. Value: 5000 mg/l. Test type: EC50 Daphnia. Species: Daphnia. Time: 48 h, Value: 26 mg/l. Test type: LC50 Fish. Species: Pimephales promelas. Time: 96 h, Value: 8.9 mg/l. Test type: LC50 Fish. Species: Pimephales promelas. Time: 96 h, Value: 4.3-6 mg/l.

### 13. DISPOSAL CONSIDERATIONS

**Substance Disposal-** **Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine, Sodium Chloride and Sodium Borohydride** - 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. Observe all federal, state, and local environmental regulations.

### 14. TRANSPORT INFORMATION

**Sodium Bicarbonate, Trizma-Base, Dulbecco's Phosphate saline, Potassium Chloride, Ethylenediamine-Tetraacetic acid (EDTA), Tris-Hcl, Triton X-100, Glycine and Sodium Chloride - RID/ADR:** Non-hazardous for road transport. **IMDG:** Non-hazardous for sea transport. **IATA:** Non-hazardous for air transport.

**Sodium Borohydride- RID/ADR:** UN#: 1426, Class: 4.3, PG: I. Proper shipping name: Sodium borohydride **IMDG:** UN#: 1426, Class: 4.3, PG: I. EmS Number: 4.3-04, NFAG number: 245, Proper Shipping name: Sodium borohydride. Marine Pollutant: No. Severe marine pollutant: No. **IATA:** UN#: 1426, Class: 4.3, PG: I. Proper shipping name: Sodium borohydride. Inhalation packing group I: No

### 15. REGULATORY INFORMATION

**Sodium Bicarbonate-** Not hazardous according to directive 67/548/EC. **Country specific information:** Germany: WGK: 1. Switzerland: Swiss poison class: 5.

**Trizma-Base- Classification and labeling according to EU directives indication of danger:** Xi. Irritant. R-Phrases: 36/37/38, irritating to eyes, respiratory system and skin. S-Phrases: 26 36, In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. **Country specific information:** Germany: WGK: 2. Switzerland: Swiss poison class: FREI. Norway: Declaration number: 67087.

**Dulbecco's Phosphate saline-** Not hazardous according to directive 67/548/EC.

**Potassium Chloride- Classification and labeling according to EU directives indication of danger:** S-Phrases: 22/24/25. Avoid contact with skin and eyes. **Country specific information:** Germany: WGK: 1. Switzerland: Swiss poison class: 5.

**Ethylenediamine-Tetraacetic acid (EDTA)- Classification and labeling according to EU directives indication of danger:** Xi. Irritant. R-Phrases: 36/38, irritating to eyes and skin. S-Phrases: 26 36, In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. **Country specific information:** Germany: WGK: 2. Switzerland: Swiss poison class: 4.

**Tris-Hcl- Classification and labeling according to EU directives indication of danger:** Xi. Irritant. R-Phrases: 36/37/38, irritating to eyes, respiratory system and skin. S-Phrases: 26 36, In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. **Country specific information:** Germany: WGK: 1.

**Triton X-100- Classification and labeling according to EU directives indication of danger:** Xn. Harmful. R-Phrases: 22 41, Harmful if swallowed. Risk of serious damage to eyes. S-Phrases: 26 36/39, In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective



clothing and eye/face protection. **Country specific information:** Germany: WGK: 1. Switzerland: Swiss poison class: 4.

**Glycine- Classification and labeling according to EU directives indication of danger:** S-Phrases: 22 24/25. Avoid contact with skin and eyes. **Country specific information:** Germany: WGK: 2. Switzerland: Swiss poison class: FREI.

**Sodium Chloride - Country specific information:** Germany: WGK: 1. Switzerland: Swiss poison class: 4.

**Sodium Borohydride- Classification and labeling according to EU directives indication of danger:** F T+. Highly flammable. Very toxic. R-Phrases: 15 24/25 26 34. Contact with water liberates extremely flammable gases. Toxic in contact with skin and if swallowed. Very toxic by inhalation. Causes burns. S-Phrases: 22 26 36/37/39 43 45. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection. In case of fire, use dry sand. Never use water. In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). **Country specific information:** Germany: WGK: 2. Switzerland: Swiss poison class: 3.

## 16. OTHER INFORMATION

**Warranty:** The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Gene Bio-Application Ltd. shall not be held liable for any damage resulting from handling or from contact with the above product.

**Disclaimer:** For R&D use only. Not for drug, household or other uses.