



# SAFETY DATA SHEET

United States

## Section 1. Identification

Product name

**Formulation Buffer (10X); part of 'GenVoy-  
ILM™ T Cell Kit for mRNA on NanoAssemblr®  
Spark™'**

Catalogue Number

1000701



9 0 1 0 0 0 7 0 1

Other means of identification Not available.

Product type Liquid.

## Relevant identified uses of the substance or mixture and uses advised against

Analytical chemistry.

Laboratory chemicals

Scientific research and development

Supplier

Cytiva  
Amersham Place  
Little Chalfont  
Buckinghamshire  
HP7 9NA United Kingdom  
+44 1494 508000

Cytiva USA  
100 Results Way  
Marlborough, MA 01752  
1-800-526-3593

In case of emergency

INFOTRAC - 24 Hour number: 1-800-535-5053

Outside of the United States, call 24 Hour number: 001-352-323-3500 (Call Collect)

---

## Section 2. Hazards identification

OSHA/HCS status

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture

Not classified.

Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 13.6%

### GHS label elements

Signal word

No signal word.

Hazard statements

No known significant effects or critical hazards.

### Precautionary statements

Prevention

Not applicable.

Response

Not applicable.

Storage

Not applicable.

Disposal

Not applicable.

Hazards not otherwise classified

None known.

Hazards identified when used

No known significant effects or critical hazards.

---



### Section 3. Composition/information on ingredients

<b>Substance/mixture</b>	Mixture		
<b>Other means of identification</b>	Not available.		
<b>Ingredient name</b>	<b>Synonyms</b>	<b>%</b>	<b>Identifiers</b>
hydrochloric acid		≥1 - ≤5	CAS: 7647-01-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.**

**Occupational exposure limits, if available, are listed in Section 8.**

### Section 4. First aid measures

#### Description of necessary first aid measures

<b>Eye contact</b>	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
<b>Skin contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
<b>Ingestion</b>	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

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

##### Potential acute health effects

<b>Eye contact</b>	No known significant effects or critical hazards.
<b>Inhalation</b>	No known significant effects or critical hazards.
<b>Skin contact</b>	No known significant effects or critical hazards.
<b>Ingestion</b>	No known significant effects or critical hazards.

##### Over-exposure signs/symptoms

<b>Eye contact</b>	No specific data.
<b>Inhalation</b>	No specific data.
<b>Skin contact</b>	No specific data.
<b>Ingestion</b>	No specific data.

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

<b>Notes to physician</b>	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	No specific treatment.
<b>Protection of first-aiders</b>	No action shall be taken involving any personal risk or without suitable training.

#### See toxicological information (Section 11)

### Section 5. Fire-fighting measures

#### Extinguishing media

<b>Suitable extinguishing media</b>	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Hazardous thermal decomposition products</b>	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides
<b>Special protective actions for fire-fighters</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Special protective equipment for fire-fighters</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.



## Section 6. Accidental release measures

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

<b>For non-emergency personnel</b>	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>Environmental precautions</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### **Methods and materials for containment and cleaning up**

<b>Small spill</b>	Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
<b>Large spill</b>	Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

## Section 7. Handling and storage

### **Precautions for safe handling**

<b>Protective measures</b>	Put on appropriate personal protective equipment (see Section 8).
<b>Advice on general occupational hygiene</b>	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
<b>Conditions for safe storage, including any incompatibilities</b>	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

## Section 8. Exposure controls/personal protection

### **Control parameters**

#### **Occupational exposure limits**

**Ingredient name**  
hydrochloric acid

#### **Exposure limits**

##### **NIOSH REL (United States, 10/2020)**

CEIL: 5 ppm.  
CEIL: 7 mg/m<sup>3</sup>.

##### **CAL OSHA PEL (United States, 1/2025)**

C: 2 ppm.  
TWA 8 hours: 0.45 mg/m<sup>3</sup>.  
TWA 8 hours: 0.3 ppm.

##### **OSHA PEL (United States, 5/2018)**

CEIL: 5 ppm.  
CEIL: 7 mg/m<sup>3</sup>.

##### **OSHA PEL 1989 (United States, 3/1989)**

CEIL: 5 ppm.  
CEIL: 7 mg/m<sup>3</sup>.

##### **ACGIH TLV (United States, 1/2024) A4.**

C: 2 ppm.

#### **Biological exposure indices**

No exposure indices known.

#### **Appropriate engineering controls**

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

#### **Environmental exposure controls**

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### **Individual protection measures**

#### **Hygiene measures**

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.



<b>Eye/face protection</b>	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
<b>Skin protection</b>	
<b>Hand protection</b>	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
<b>Body protection</b>	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Other skin protection</b>	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Respiratory protection</b>	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	Liquid.
<b>Color</b>	Colorless. Clear.
<b>Odor</b>	Not available.
<b>Odor threshold</b>	Not available.
<b>pH</b>	3.8 to 4.4
<b>Melting point/freezing point</b>	Not available.
<b>Boiling point or initial boiling point and boiling range</b>	Not available.
<b>Flash point</b>	[Product does not sustain combustion.]
<b>Burning time</b>	Not applicable.
<b>Burning rate</b>	Not applicable.
<b>Evaporation rate</b>	Not available.
<b>Flammability</b>	Not available.
<b>Lower and upper explosive (flammable) limits</b>	Not available.
<b>Vapor pressure</b>	Not available.

### Vapor Pressure at 20°C

Ingredient name	mm Hg	kPa	Method	mm Hg	kPa	Method
water	17.5	2.3				

<b>Relative vapor density</b>	Not available.
<b>Relative density</b>	Not available.
<b>Solubility in water</b>	Not available.
<b>Partition coefficient: n-octanol/water</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>SADT</b>	Not available.
<b>Viscosity</b>	Dynamic (room temperature): Not available. Kinematic (room temperature): Not available. Kinematic (40°C (104°F)): Not available.
<b>Flow time (ISO 2431)</b>	Not available.

### Particle characteristics

<b>Median particle size</b>	Not applicable.
-----------------------------	-----------------

## Section 10. Stability and reactivity

<b>Reactivity</b>	No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	The product is stable.
<b>Possibility of hazardous reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	No specific data.
<b>Incompatible materials</b>	No specific data.



<b>Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
---	--

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

##### **Product/ingredient name**

hydrochloric acid

##### **Result**

##### **Rat - Inhalation - LC50 Gas.**

3124 ppm [1 hours]

Toxic effects: Olfaction - Other changes Eye - Iritis

**Conclusion/Summary  
[Product]** Not available.

#### Skin corrosion/irritation

##### **Product/ingredient name**

hydrochloric acid

##### **Result**

##### **Human - Skin - Mild irritant**

Duration of treatment/exposure: 24 hours

Amount/concentration applied: 4 %

**Conclusion/Summary  
[Product]** Not available.

#### Serious eye damage/eye irritation

##### **Product/ingredient name**

hydrochloric acid

##### **Result**

##### **Rabbit - Eyes - Mild irritant**

Duration of treatment/exposure: 0.5 minutes

Amount/concentration applied: 5 mg

**Conclusion/Summary  
[Product]** Not available.

#### Respiratory corrosion/irritation

Not available.

**Conclusion/Summary  
[Product]** Not available.

#### Respiratory or skin sensitization

Not available.

#### Skin

**Conclusion/Summary  
[Product]** Not available.

#### Respiratory

**Conclusion/Summary  
[Product]** Not available.

#### Germ cell mutagenicity

Not available.

**Conclusion/Summary  
[Product]** Not available.

#### Carcinogenicity

Not available.

**Conclusion/Summary  
[Product]** Not available.

#### Classification



9 5 3 1 1 5 9 3 3 4 2

Product/ingredient name	OSHA	IARC	NTP
hydrochloric acid	-	3	-

#### Reproductive toxicity

Not available.

**Conclusion/Summary [Product]** Not available.

#### Specific target organ toxicity (single exposure)

##### **Product/ingredient name**

hydrochloric acid

##### **Result**

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE)  
(Respiratory tract irritation) - Category 3

#### Specific target organ toxicity (repeated exposure)

Not available.

#### Aspiration hazard

Not available.

**Information on the likely routes of exposure** Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

#### Potential acute health effects

<b>Eye contact</b>	No known significant effects or critical hazards.
<b>Inhalation</b>	No known significant effects or critical hazards.
<b>Skin contact</b>	No known significant effects or critical hazards.
<b>Ingestion</b>	No known significant effects or critical hazards.

#### Symptoms related to the physical, chemical and toxicological characteristics

<b>Eye contact</b>	No specific data.
<b>Inhalation</b>	No specific data.
<b>Skin contact</b>	No specific data.
<b>Ingestion</b>	No specific data.

#### Delayed and immediate effects and also chronic effects from short and long term exposure

##### Short term exposure

<b>Potential immediate effects</b>	Not available.
<b>Potential delayed effects</b>	Not available.

##### Long term exposure

<b>Potential immediate effects</b>	Not available.
<b>Potential delayed effects</b>	Not available.

#### Potential chronic health effects

Not available.

**Conclusion/Summary [Product]** Not available.

<b>General</b>	No known significant effects or critical hazards.
<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Mutagenicity</b>	No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	No known significant effects or critical hazards.

#### Numerical measures of toxicity

##### Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)



Formulation Buffer (10X); part of 'GenVoy-ILM™ T Cell Kit for mRNA on NanoAssemblr® Spark™' hydrochloric acid	25955.9 N/A	N/A N/A	50387.1 1562	N/A N/A	N/A N/A
--	----------------	------------	-----------------	------------	------------

## Section 12. Ecological information

### Toxicity

#### Product/ingredient name

hydrochloric acid

#### Result

##### Acute - LC50 - Marine water

Crustaceans - Green crab - *Carcinus maenas* - Adult  
240 mg/l [48 hours]

Effect: Mortality

##### Acute - LC50 - Fresh water

Fish - Western mosquitofish - *Gambusia affinis* - Adult  
282 ppm [96 hours]

Effect: Mortality

**Conclusion/Summary**  
[Product]

Not available.

### Persistence and degradability

Not available.

### Bioaccumulative potential

Not available.

### Mobility in soil

Soil/Water partition coefficient

Not available.

### Other adverse effects

No known significant effects or critical hazards.

## Section 13. Disposal considerations

### Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification
UN number	Not available.	Not available.	Not available.
UN proper shipping name	Not available.	Not available.	Not available.
Transport hazard class(es)	Not available.	Not available.	Not available.

### Packing group

-

### Environmental hazards

No.

### Additional information

-

	ADR/RID	IMDG	IATA
UN number	Not available.	Not available.	Not available.
UN proper shipping name	Not available.	Not available.	Not available.
Transport hazard class(es)	Not available.	Not available.	Not available.

### Packing group

-

### Environmental hazards

No.

### Additional information

-



<b>Special precautions for user</b>	<b>Transport within user's premises:</b> always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
<b>Transport in bulk according to IMO instruments</b>	Not available.
<b>Proper shipping name</b>	Not available.

## Section 15. Regulatory information

**U.S. Federal regulations**      **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined  
**Clean Water Act (CWA) 311:** Hydrochloric acid

**Clean Air Act (CAA) 112 regulated toxic substances:** Hydrochloric acid

### TSCA 12(b) - Chemical export notification

Not applicable.

<b>Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)</b>	Listed
<b>Clean Air Act Section 602 Class I Substances</b>	Not listed
<b>Clean Air Act Section 602 Class II Substances</b>	Not listed
<b>DEA List I Chemicals (Precursor Chemicals)</b>	Not listed
<b>DEA List II Chemicals (Essential Chemicals)</b>	Not listed

### SARA 302/304

#### Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
Hydrochloric acid	3.1	Yes.	500	-	5000
<b>SARA 304 RQ</b>					161290.3 lbs / 73225.8 kg

### SARA 311/312

**Classification**      Not applicable.

#### Composition/information on ingredients

Name	%	Classification
hydrochloric acid	3.1	ACUTE TOXICITY (inhalation) - Category 3 SKIN CORROSION - Category 1B SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

### SARA 313

	Product name	CAS number	%
<b>Form R - Reporting requirements</b>	Hydrochloric acid	7647-01-0	3.1
<b>Supplier notification</b>	Hydrochloric acid	7647-01-0	3.1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

### State regulations

<b>Massachusetts</b>	The following components are listed: HYDROGEN CHLORIDE
<b>New York</b>	The following components are listed: Hydrochloric acid
<b>New Jersey</b>	The following components are listed: HYDROGEN CHLORIDE
<b>Pennsylvania</b>	The following components are listed: HYDROCHLORIC ACID

### California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants



Not listed.

**Rotterdam Convention on Prior Informed Consent (PIC)**

Not listed.

**UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

**Inventory list**

**United States** All components are active or exempted.

**Canada inventory** All components are listed or exempted.

---

## Section 16. Other information

**National Fire Protection Association (U.S.A.)**



**Procedure used to derive the classification**

**Classification**

**Justification**

Not classified.

**History**

**Date of printing** 11/18/2025

**Date of issue/Date of revision** 11/18/2025

**Date of previous issue** 5/22/2024

**Version** 5

sds\_author@cytiva.com

**Key to abbreviations**

ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

N/A = Not available

UN = United Nations

**References**

Not available.

► Indicates information that has changed from previously issued version.

**Notice to reader**

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

---

