Safety Data Sheet
10X Citrate Buffer pH 8.0

SECTION 1: Identification

1.1 GHS Product identifier

Product name	10X Citrate Buffer pH 8.0
Product number	NB900-66729
Brand	10X Citrate Buffer pH 8.0

1.3 Recommended use of the chemical and restrictions on use

For In Vitro Diagnostic use.
Immunohistochemistry
In Situ Hybridization

1.4 Supplier's details

Name	Novus Biologicals
Address	10771 East Easter Avenue Centennial, CO 80112, USA
Telephone	303-730-1950
email	nb-customerservice@bio-techne.com

1.5 Emergency phone number

800-343-7475

SECTION 2: Hazard identification

General hazard statement
For professional users only

2.1 Classification of the substance or mixture

GHS classification in accordance with: OSHA (29 CFR 1910.1200)

- Acute toxicity, dermal (chapter 3.1), Cat. 5
- Acute toxicity, inhalation (chapter 3.1), Cat. 5
- Acute toxicity, oral (chapter 3.1), Cat. 5
- Acute toxicity, dermal (C.4.2), Cat. 1
- Acute toxicity, inhalation (C.4.3), Cat. 2

- Acute toxicity, oral (C.4.1), Cat. 2
- Hazardous to the aquatic environment, short-term (acute) (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment, long-term (chronic) (chapter 4.1), Cat. 1
- Eye damage/irritation (C.4.5), Cat. 2A
- Specific target organ toxicity (repeated exposure) (C.4.12), Cat. 2

2.2 GHS label elements, including precautionary statements

Pictogram

1. Skull and crossbones; 2. Exclamation mark; 3. Health hazard; 4. Environment

Signal word **Warning**

Hazard statement(s)

H300	Fatal if swallowed
H310	Fatal in contact with skin
H319	Causes serious eye irritation
H373	May cause damage to organs [organs] through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	[In case of inadequate ventilation] wear respiratory protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P302+P352	IF ON SKIN: Wash with plenty of water.
P304+P340	IF INHALED: Remove person to fresh air and keep 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/doctor.
P314	Get medical advice/attention if you feel unwell.
P320	Specific treatment is urgent (see … on this label).
P330	Rinse mouth.
P337+P313	If eye irritation persists: Get medical advice/attention.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P391	Collect spillage.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container to a licensed disposal company.

2.3 Other hazards which do not result in classification

No data available.

Statement regarding ingredients of unknown toxicity

No data available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

1. SODIUM AZIDE

Concentration	0.01 - 0.1 % (weight)
Other names / synonyms	Sodium azide (Na(N3))
EC no.	247-852-1
CAS no.	26628-22-8
Index no.	011-004-00-7

- Acute toxicity, dermal (C.4.2), Cat. 1
- Acute toxicity, inhalation (C.4.3), Cat. 2
- Acute toxicity, oral (C.4.1), Cat. 2
- Specific target organ toxicity (repeated exposure) (C.4.12), Cat. 2
- Hazardous to the aquatic environment, short-term (acute) (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment, long-term (chronic) (chapter 4.1), Cat. 1

2. Citric acid

Concentration	0.1 - 1 % (weight)
Other names / synonyms	1,2,3-Propanetricarboxylic acid, 2-hydroxy-; 1,2,3-Propanetricarboxylic acid, 2-hydroxy-, monohydrate; 2-Hydroxy-1,2,3-propanetricarboxylic acid; Acidum citricum; ACILETTEN; ANHYDROUS CITRIC ACID; BETA-HYDROXYTRICARBALLYLIC ACID; CITRETTEN; CITRICACID; CITRO; HYDROCEROL A
EC no.	201-069-1
CAS no.	77-92-9

- Serious eye damage/eye irritation (chapter 3.3), Cat. 2

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice	In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).
If inhaled	Call a poison center or doctor if you feel unwell.
	Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

In case of skin contact	Wash with plenty of soap and water for at least 15 minutes. Call a poison center or doctor if you feel unwell. Acute and delayed symptoms and effects: May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.
In case of eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor. Acute and delayed symptoms and effects: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.
If swallowed	Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Acute and delayed symptoms and effects: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Personal protective equipment for first-aid responders
General industrial hygiene practice.

4.2 Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

4.3 Indication of immediate medical attention and special treatment needed, if necessary
No data available

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical
Carbon oxides

SODIUM AZIDE: Sodium oxides

5.3 Special protective actions for fire-fighters
Wear self-contained breathing apparatus for firefighting if necessary.

Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection recommended in Section 8.

As an immediate precautionary measure, isolate spill or leak area in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas.

6.2 Environmental precautions
Do not let product enter drains unless in accordance with Federal, Sate and local laws and regulations.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. For precautions see section 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.

Specific end use(s)
Apart from the uses mentioned in section 1 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

CAS: 26628-22-8 (EC: 247-852-1)
Sodium azide
ACGIH: 0.29 mg/m3 (C); 0.1 ppm (C) hydrazoic acid vapor TLV® inhalation; NIOSH: 0.29 mg/m3 (C); 0.1 ppm (C) hydrazoic acid vapor REL-C inhalation

8.2 Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Pictograms

Eye/face protection
Safety glasses if there is a splash hazard. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Protective gloves. Consult manufacturer specifications for further information.

Body protection
Wear protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Not required under normal use conditions. Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal hazards
No data available.

Control banding approach
No data available.

Environmental exposure controls
Do not let product enter drains.

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid
Appearance	Transparent
Color	Clear
Odor	None
Odor threshold	No data available.
pH	6.0 - 8.0
Melting point/freezing point	No data available.
Boiling point or initial boiling point and boiling range	No data available.
Flash point	No data available.
Evaporation rate	No data available.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Vapor pressure	No data available.
Relative vapor density	No data available.
Density and/or relative density	No data available.
Solubility	No data available.
Partition coefficient n-octanol/water (log value)	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Kinematic viscosity	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.

Particle characteristics
No data available.

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
No data available.

10.4 Conditions to avoid
Contact with incompatible materials. Sources of ignition. Exposure to heat.

10.5 Incompatible materials
Citric acid: Oxidizing agents, Bases, Reducing agents, Nitrates

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Symptoms (including delayed and immediate effects):
Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing,nasal discharge, headache, hoarseness, and nose and throat pain.
Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

The ATE (dermal) of the mixture is: 5000 mg/kg bw

The ATE (gas inhalation) of the mixture is: 100000 ppmV

The ATE (oral) of the mixture is: 5000 mg/kg bw

Citric acid
LD50 Oral - Rat - 5,400 mg/kg

Sodium azide
LD50 Oral - Rat - 27 mg/kg

Skin corrosion/irritation
May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Citric acid
LD50 Skin - Rabbit - > 2,000 mg/kg

Sodium azide
LD50 Skin - Rat - 20 mg/kg

Serious eye damage/irritation
May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Respiratory or skin sensitization
Sodium azide

LC50 Inhalation - Rat - 0.054 - 0.52 mg/l - 4 hr

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

Summary of evaluation of the CMR properties
No data available.

STOT-single exposure
No data available.

STOT-repeated exposure
No data available.

Aspiration hazard
No data available.

SECTION 12: Ecological information

Toxicity
Citric acid
EC50 - Daphnia magna (water flea) - 1,535 mg/l - 24 h

Citric acid
LC50 - Leuciscus idus (golden orfe) - 440 mg/l - 48 h

Sodium azide
LC50 - Oncorhynchus mykiss (rainbow trout) - 2.96 mg/l - 96 h

Sodium azide
EC50 - Pseudokirchneriella subcapitata (green algae) - 0.348 mg/l - 96 h

Persistence and degradability
No data available.

Bioaccumulative potential
No data available on product

Mobility in soil
No data available.

Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Endocrine disrupting properties
No data available.

Other adverse effects
No data available.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Disposal should be in accordance with applicable Federal, State and local laws and regulations. Local regulations may be more stringent than State or Federal requirements.

Packaging disposal
Dispose of as unused product.

Waste treatment
No data available.

Sewage disposal
Sewage disposal is not recommended

Other disposal recommendations
Offer surplus and non-recyclable solutions to a licensed disposal company.

SECTION 14: Transport information

DOT (US)
UN Number: UN2927
Class: 6.1 (8)
Packing Group: II
Proper Shipping Name: Toxic liquids, corrosive, organic, n.o.s.
Reportable quantity (RQ):
Marine pollutant:
Poison inhalation hazard:

IMDG
UN Number: UN2927
Class: 6.1 (8)
Packing Group: II
EMS Number:
Proper Shipping Name: Toxic liquids, corrosive, organic, n.o.s.

IATA
UN Number: UN2927
Class: 6.1 (8)
Packing Group: II
Proper Shipping Name: Toxic liquids, corrosive, organic, n.o.s.

SECTION 15: Regulatory information

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

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Canadian Domestic Substances List (DSL)
Chemical name: Sodium azide (Na(N3))
CAS: 26628-22-8

Chemical name: 1,2,3-Propanetricarboxylic acid, 2-hydroxy-
CAS: 77-92-9

Chemical name: 1,2,3-Propanetricarboxylic acid, 2-hydroxy-, monohydrate
CAS: 5949-29-1

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Chemical name: Sodium azide (Na(N3))
CAS number: 26628-22-8

New Jersey Right To Know Components
No components are subject to the New Jersey Right to Know Act.

Common name: SODIUM AZIDE
CAS number: 26628-22-8

Citric acid
CAS-No. 77-92-9

Pennsylvania Right To Know Components
No components are subject to the Pennsylvania Right To Know Act.

Chemical name: Sodium azide
CAS number: 26628-22-8

Citric acid
CAS-No. 77-92-9

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 311/312 Hazards
No SARA Hazards

Acute Health Hazard

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

Seveso Directive
Yes. H2 -acute toxic. E1

15.2 Chemical Safety Assessment

The manufacturer has not performed any additional chemical safety assessments

HMIS Rating

10X Citrate Buffer for Epitope Recovery (pH 6, 7, 8) (OSHA)	
HEALTH	* 2
FLAMMABILITY	1
PHYSICAL HAZARD	
PERSONAL PROTECTION	

NFPA Rating

SECTION 16: Other information

SDS-0027, Rev. C

16.1 Further information/disclaimer

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