



T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: _____

Version: _____

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Trade name : T4 UVSX DNA Recombinase

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Scientific research and development

1.3. Details of the supplier of the safety data sheet

Geno Technology, Inc./ G-Biosciences
9800 Page Avenue
63132-1429 Saint Louis - United States
T 800-628-7730 - F 314-991-1504
technical@GBiosciences.com - www.GBiosciences.com

1.4. Emergency telephone number

Emergency number : Chemtrec **1-800-424-9300** (USA/Canada), **+1-703-527-3887** (Intl)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS US classification

Not classified

2.2. Label elements

GHS US labeling

2.3. Other hazards

2.4. Unknown acute toxicity (GHS US)

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

Name : T4 UVSX DNA Recombinase

Full text of H-phrases: see section 16

3.2. Mixtures

SECTION 4: First aid measures

4.1. Description of first aid measures

4.2. Most important symptoms and effects, both acute and delayed

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

5.2. Special hazards arising from the substance or mixture

5.3. Advice for firefighters

T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

7.2. Conditions for safe storage, including any incompatibilities

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.2. Exposure controls

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: No data available
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability	: No data available
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Solubility	: No data available
Partition coefficient n-octanol/water (Log Pow)	: No data available
Partition coefficient n-octanol/water (Log Kow)	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

9.2. Other information

T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

No additional information available

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

tris(hydroxymethyl)aminomethane (77-86-1)	
LD50 oral rat	> 5000 mg/kg body weight (OECD 425: Acute Oral Toxicity: Up-and-Down Procedure, Rat, Female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 5000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal)
LD50 dermal rabbit	5900 mg/kg Source: Corporate Solution From Thomson Micromedex
ATE CLP (dermal)	5900 mg/kg body weight

potassium chloride (7447-40-7)	
LD50 oral rat	3020 mg/kg body weight (Rat, Female, Experimental value, Oral)
ATE CLP (oral)	3020 mg/kg body weight

1,4-dithiothreitol (3483-12-3)	
LD50 oral rat	400 mg/kg (Rat, Oral)
ATE CLP (oral)	400 mg/kg body weight

ethylenediaminetetraacetic acid, disodium salt (139-33-3)	
LD50 oral rat	2800 mg/kg (Rat, Male / female, Experimental value, Oral, 7 day(s))
LC50 Inhalation - Rat	> 1 mg/l (OECD 412: Repeated Dose Inhalation Toxicity:28/14-Day, 6 h, Rat, Male, Estimated value, Inhalation (aerosol))
ATE CLP (oral)	2800 mg/kg body weight
ATE CLP (gases)	4500 ppmV/4h
ATE CLP (vapors)	11 mg/l/4h
ATE CLP (dust, mist)	1.5 mg/l/4h

glycerol (56-81-5)	
LD50 oral rat	27200 mg/kg (OECD 401: Acute Oral Toxicity, Rat, Female, Experimental value, Oral, 10 day(s))
LC50 Inhalation - Rat	> 2.75 mg/l (4 h, Rat, Male, Experimental value, Converted value, Inhalation (vapours))
ATE CLP (oral)	27200 mg/kg body weight
ATE CLP (dermal)	56750 mg/kg body weight

Deionized water (7732-18-5)	
LD50 oral rat	90000 mg/kg
ATE CLP (oral)	90000 mg/kg body weight

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

potassium chloride (7447-40-7)	
NOAEL (chronic,oral,animal/male,2 years)	≈ 1820 mg/kg body weight Animal: rat, Animal sex: male, Remarks on results: other:Effect type: toxicity (migrated information)

Reproductive toxicity : Not classified

T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

tris(hydroxymethyl)aminomethane (77-86-1)	
LOAEL (oral, rat, 90 days)	1000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (oral, rat, 90 days)	250 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)

potassium chloride (7447-40-7)	
NOAEL (oral, rat, 90 days)	≈ 1820 mg/kg body weight Animal: rat, Animal sex: male

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

tris(hydroxymethyl)aminomethane (77-86-1)	
LC50 - Fish [1]	955.892 mg/l Source: Ecological Structure Activity Relationships
EC50 - Crustacea [1]	> 980 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
ErC50 algae	397 mg/l (Equivalent or similar to OECD 201, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)

potassium chloride (7447-40-7)	
LC50 - Fish [1]	880 mg/l (EPA 600/4-90/027, 96 h, Pimephales promelas, Static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	440 – 880 mg/l (EPA 600/4-90/027, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
EC50 - Other aquatic organisms [1]	440 – 880 mg/l Test organisms (species): other: see below
EC50 - Other aquatic organisms [2]	580 – 670 mg/l Test organisms (species): other: see below
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, Nominal concentration)

ethylenediaminetetraacetic acid, disodium salt (139-33-3)	
LC50 - Fish [1]	705 mg/l (US EPA, 96 h, Lepomis macrochirus, Static system, Fresh water, Read-across, Nominal concentration)
EC50 - Crustacea [1]	140 mg/l (DIN 38412-11, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Nominal concentration)
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Weight of evidence, GLP)

glycerol (56-81-5)	
LC50 - Fish [1]	54000 mg/l (96 h, Oncorhynchus mykiss, Static system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]	> 10000 mg/l (24 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)

12.2. Persistence and degradability

tris(hydroxymethyl)aminomethane (77-86-1)	
Persistence and degradability	Readily biodegradable in water.

potassium chloride (7447-40-7)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

1,4-dithiothreitol (3483-12-3)	
Persistence and degradability	Biodegradability in water: no data available.

ethylenediaminetetraacetic acid, disodium salt (139-33-3)	
Persistence and degradability	Not readily biodegradable in water.
Chemical oxygen demand (COD)	0.63 g O ₂ /g substance

glycerol (56-81-5)	
Persistence and degradability	Readily biodegradable in water.
Biochemical oxygen demand (BOD)	0.87 g O ₂ /g substance
Chemical oxygen demand (COD)	1.16 g O ₂ /g substance
ThOD	1.217 g O ₂ /g substance

12.3. Bioaccumulative potential

T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

tris(hydroxymethyl)aminomethane (77-86-1)	
Partition coefficient n-octanol/water (Log Pow)	-2.31 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 20 °C)
Bioaccumulative potential	Not bioaccumulative.
potassium chloride (7447-40-7)	
Bioaccumulative potential	Not bioaccumulative.
1,4-dithiothreitol (3483-12-3)	
Bioaccumulative potential	No bioaccumulation data available.
ethylenediaminetetraacetic acid, disodium salt (139-33-3)	
BCF - Fish [1]	1.1 – 1.8 (Other, 28 day(s), Lepomis macrochirus, Flow-through system, Fresh water, Read-across, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	-4.3 (Experimental value, Equivalent or similar to OECD 107, 25 °C)
Bioaccumulative potential	Not bioaccumulative.
glycerol (56-81-5)	
Partition coefficient n-octanol/water (Log Pow)	-1.75 (Experimental value, Equivalent or similar to OECD 107, 25 °C)
Bioaccumulative potential	Not bioaccumulative.
Deionized water (7732-18-5)	
Partition coefficient n-octanol/water (Log Pow)	-1.38

12.4. Mobility in soil

tris(hydroxymethyl)aminomethane (77-86-1)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.34 – 1.87 (log Koc, QSAR)
Ecology - soil	Highly mobile in soil.
potassium chloride (7447-40-7)	
Surface tension	Data waiving
Ecology - soil	Low potential for adsorption in soil.
ethylenediaminetetraacetic acid, disodium salt (139-33-3)	
Ecology - soil	Low potential for adsorption in soil.
glycerol (56-81-5)	
Surface tension	63.4 mN/m (20 °C, 1000 g/l)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	0 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Highly mobile in soil.

12.5. Other adverse effects

SECTION 13: Disposal considerations

13.1. Waste treatment methods

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

Not applicable

14.2. UN proper shipping name

14.3. Additional information

Other information : No supplementary information available.

Overland transport

Transport by sea

Air transport

T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: Regulatory information

15.1. US Federal regulations

tris(hydroxymethyl)aminomethane (77-86-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

potassium chloride (7447-40-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

1,4-dithiothreitol (3483-12-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

glycerol (56-81-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Deionized water (7732-18-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

tris(hydroxymethyl)aminomethane (77-86-1)

Listed on the Canadian DSL (Domestic Substances List)

potassium chloride (7447-40-7)

Listed on the Canadian DSL (Domestic Substances List)

1,4-dithiothreitol (3483-12-3)

Listed on the Canadian DSL (Domestic Substances List)

glycerol (56-81-5)

Listed on the Canadian DSL (Domestic Substances List)

Deionized water (7732-18-5)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

potassium chloride (7447-40-7)**1,4-dithiothreitol (3483-12-3)****glycerol (56-81-5)****Deionized water (7732-18-5)**

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

15.2.2. National regulations

potassium chloride (7447-40-7)**1,4-dithiothreitol (3483-12-3)****glycerol (56-81-5)****Deionized water (7732-18-5)**

15.3. US State regulations

T4 UVSX DNA Recombinase()

U.S. - California - Proposition 65 - Carcinogens List

No

U.S. - California - Proposition 65 - Developmental Toxicity

No

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

No

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

No

tris(hydroxymethyl)aminomethane (77-86-1)

U.S. - California - Proposition 65 - Carcinogens List

U.S. - California - Proposition 65 - Developmental Toxicity

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

No significant risk level (NSRL)

T4 UVSX DNA Recombinase

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

tris(hydroxymethyl)aminomethane (77-86-1)				
No	No	No	No	
potassium chloride (7447-40-7)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
1,4-dithiothreitol (3483-12-3)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
ethylenediaminetetraacetic acid, disodium salt (139-33-3)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
glycerol (56-81-5)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
Deionized water (7732-18-5)				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
glycerol (56-81-5)				
State or local regulations				
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List				

SECTION 16: Other information

SDS US GENO (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.