Hot Start TTx (RNA) Kit
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SDS No.1691F

Safety Data Sheet

1 Chemical product and company identification

Identification of the product	Hot Start TTx (RNA) Kit
Product Code	HSTTX-111
SUPPLIER	
Name	TOYOBO Co., Ltd.
Address	2-8 Dojima Hama 2-chome, Kita-ku OSAKA 530-8230 JAPAN
Department	Biotechnology Overseas Sales and Marketing Department
Emergency Telephone No.	+81-6-6348-3843
Fax No.	+81-6-6348-3833
Recommended use and restrictions on us	PCR Reagent (Reagent for research)

2 HAZARDS IDENTIFICATION

Important Hazards	Few adverse human health effects are anticipated.	
GHS Classification		
Hazard class and category		
Physical Hazards	Classification not possible	
Health Hazards	5x Buffer for rTth/TTx (DNA/RNA)	Hot Start TTx DNA Polymerase
Acute Toxicity(Oral)	Not classified	Not classified
Skin corrosion/Irritation	Category 3	Category 3
Serious eye damage/Eye irritation	Category 2B	Category 2B
Environmental Hazards	Classification not possible	

Label elements
<5x Buffer for rTth/TTx (DNA/RNA), Hot Start TTx DNA Polymerase>

Pictograms or symbols	—
Signal word	Warning
Hazard statements	Causes mild skin irritation.
	Causes eye irritation
Precautionary statements	
Prevention	Wash hands thoroughly after handling.
Response	If skin irritation occurs: Get medical advice / attention.
	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice / attention.

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3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Product (Substance/Mixture)	Mixture	
Chemical Nature	Aqueous solution of enzyme, substrate, etc.	
Parts Name	Main components	CAS No. (EC NO.)
<5x Buffer for rTth/TTx (DNA/RNA)>	Bicine (N,N-Bis(2-hydroxyethyl)glycine)	150-25-4
	Potassium acetate	127-08-2
	Polyethylene glycol mono-p-isooctylphenyl ether	9002-93-1
	Glycerol	56-81-5
<Hot Start TTx DNA Polymerase>	Tris(hydroxymethyl)aminomethan	77-86-1
	Potassium chloride	7447-40-7
	DNA polymerase	(EC 2.7.7.7)
	Glycerol	56-81-5
	Polyoxyethylene sorbitan monolaurate	9005-64-5
<50mM $Mn(OAc)_2$>	Manganese(II) acetate	638-38-0

Components Contributing to the Hazard

Common Chemical Name (or Generic Name)	Polyethylene glycol mono-p-isooctylphen	Glycerol	Polyoxyethylene sorbitan monolaurate	Manganese(II) acetate
Synonyms	Triton X-100, Polyethylene Glycol-p-(1,1,3,3-tetramethylbutyl) phenyl	Glycerin	Tween20	$Mn(OAc)_2$
Contained Parts:Percentage	5x Buffer for rTth/TTx (DNA/RNA): <0.1%	5x Buffer for rTth/TTx (DNA/RNA), Hot Start TTx DNA Polymerase: ≤50%	Hot Start TTx DNA Polymerase: 0.5%	50mM $Mn(OAc)_2$:0.9% (<0.3% as Mn)
Chemical formula	C_8H_{17}-C_6H_4O-	$CH_2OHCHOHCH_2OH$	$C_{11}H_{23}COOC_6H_8[O(CH_2CH_2$	$(CH_3COO)_2Mn$
CAS No.	9002-93-1	56-81-5	9005-64-5	638-38-0

4 FIRST-AID MEASURES

Inhalation	In case of irritation by inhaling this product, remove person to fresh air and keep comfortable for breathing. Seek medical attention.
Skin Contact	Wash with clean water, immediately. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs: Get medical advice/ attention.
Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention.
Ingestion	Rinse mouth.Induce vomiting. If indisposition continues, seek medical attention.

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5 FIRE-FIGHTING MEASURES

Extinguishing Media	Water, Carbon Dioxide, Foam, Dry Chemical Powder
Specific extinguishing methods	Fire-fighting should be done from the windward side.
Protection of fire-fighters	Fire-fighters should wear proper protective equipment in case of large scale fire.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions	Wear protective gear to avoid eye/skin contact and inhalation.
Environmental Precautions	Avoid disposition to the environment.
Methods for Cleaning up	Take up under vacuum or soak up using cloth, paper or anything similar and wash away the remainder with a large amount of water.

7 HANDLING AND STORAGE

HANDLING

Technical Measures	Wear protective equipments and avoid contact with eyes and skin. Handle with ventilation and local exhaust system.
Precautions	Good laboratory technique should be used when handling this product.
Hygiene measures	After handling, wash with clean water.

STORAGE

Storage Conditions	Store at about -20°C
Packaging Materials	Store in the original package

8 EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING MEASURES: Set up good ventilation and exhaust system in the work area.

Control Parameter

Occupational exposure limit

	Polyethylene glycol mono-p-isooctylphenyl ether	Glycerol	Polyethylene glycol mono-p-isooctylphenyl ether	Manganese(II) acetate
JSOH OEL	not established	Not established	not established	0.2mg/m^3
ACGIH TLV	not established	10mg/m^3	not established	0.02mg/m3(resp.), 0.1mg/m3(IHL) (as inorganic manganese compounds)
OSHA PEL	not established	Total dust: 15mg/m^{3}TWA	not established	5mg/m3(as manganese and manganase compounds)

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection	Wear a dust mask.
Hand Protection	Chemical safety gloves.
Eye Protection	Chemical safety goggles.
Skin and Body Protection	Long sleeves to prevent contact with skin.

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9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid. 5x Buffer for rTth/TTx (DNA/RNA) and 50mM $Mn(OAc)_2$ freeze at -20℃. Hot Start TTx DNA Polymerase is liquid over -20℃.
Colour	None
Odour	None
pH	7.0-9.0
Flash Point	Not flammable due to aqueous solution, Glycerol whose flash point 160℃ may also stay behind after volatilization.
Melting Point	Not available
Boiling Point	Not available
Decomposition Temperature	Not available
Specific gravity	1.0-1.2(g/cm^3)
Solubility	Soluble in water

10 STABILITY AND REACTIVITY

Stability	Stable at -20℃
Possible Hazardous Reactions	None
Conditions to Avoid	Strong heat, direct sunlight
Incompatible materials	Strong oxidizers and strong reducers
Hazardous Decomposition Product	Not available

11 TOXICOLOGICAL INFORMATION

<5x Buffer for rTth/TTx (DNA/RNA)>

Acute Toxicity, etc.	Not available
Reproduct Toxicity	Not available
Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/eye irritation	May cause eye irritation.

Toxicological information on the component of this product

	Glycerol	Polyethylene glycol mono-p-isooctylphenyl ether
Acute toxicity (Oral)	Oral-mouse: 4090mg/kg Oral-rat: 12.6g/kg	Mouse LD50: 4773mg/kg Oral-rat: 1800mg/kg
Skin corrosion/irritation	May cause skin irritation.	May cause skin irritation.
Serious eye damage/eye irritation	May cause eye irritation	May cause eye irritation

<Hot Start TTx DNA Polymerase>

Acute Toxicity	Not available
Skin corrosion/irritation	May cause mild skin irritation.
Serious eye damage/eye irritation	May cause eye irritation.

Toxicological information on the component of this product

	Glycerol
Acute toxicity (LD50)	Oral-mouse: 4090mg/kg Oral-rat: 12.6g/kg
Skin corrosion/irritation	Causes mild skin irritation
Serious eye damage/eye irritation	Causes eye irritation

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<50mM $Mn(OAc)_2$>

Acute Toxicity	Not available
Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/eye irritation	May cause eye irritation.
Toxicological information on the component of this product	
	Manganese(II) acetate
Acute toxicity (LD50)	Oral-rat: 3.73g/kg
Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/eye irritation	May cause eye irritation.

12 ECOLOGICAL INFORMATION

Ecotoxicity	Glycerol	Polyethylene glycol mono-p-isooctylphenyl ether
	Fish(Rainboutrout): LC50(96hr) 54g/L , (Goldfish): LC50(24hr)＞5g/L Crustacea(Daphnia magna): EC50(24hr) ＞10g/L Red algae：EC50(28hr) 4.6g/L	Fish(Bluegill): LC50(96hr) 3 mg/L
Persistence and degradability	Polyethylene Glycol Mono-p-isooctylphenyl Ether isn't biodegradable. Enzyme, protein, and glycerol are biodegradable.	
Bioaccumulative potential	Not bioaccumulative	
Mobility in soil	Soluble in water and diffusible into water environment.	

13 DISPOSAL CONSIDERATIONS

Waste from Residues	Dispose of in accordance with all applicable local and national laws and regulations.
Contaminated Packaging	Dispose of in accordance with all applicable local and national laws and regulations.

14 TRANSPORT INFORMATION

International Regulations	
UN Classification Number	Not classified Follow all of the laws and regulations in your respective country.
Specific Precautions	To prevent packages from breaking, handle with care.Store at about -20°C when it is transported.

15 REGULATORY INFORMATION

Regulations, Evaluation, Authorization and Restriction of Chemicals(EU)	The following ingredients are included in SVHC(Candidate list of authorization)
Common Chemical name	Polyethylene glycol mono-p-isooctylphenyl ether(Triton X-100)
Concentration or concentration range	＜0.1% (W/W)
Chemical fomula	$HO(C_2H_4O)n\text{-}C_6H_4\text{-}C_8H_{17}$
CAS#	9002-93-1
Regulations	Follow all of the laws and regulations in your country.

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16 OTHER INFORMATION

Notice

Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. The information in this SDS, to the best of our knowledge, is accurate and correct. However, TOYOBO makes no warranty and assumes no liability whatsoever in connection with any use of this information. The information shall not be taken as being all inclusive and is to be used only a guide. All materials and mixtures may be present unknown hazards and should be used with caution. The SDS is subject to revision as new information becomes available.