



Catalog #

Aliquot Size

TQ03-E311-1000

1000 U

TQ03-E311-5000

5000 U

Taq HS DNA Polymerase

Catalog # TQ03-E311

Lot # 1S2476-2

Product Description

Taq HS DNA polymerase consists of a mixture of Taq DNA polymerase and Champagne Taq antibody. Taq HS DNA polymerase is inactive at temperatures up to 55°C, which minimizes non-specific amplification during mixing and system heating.

Components

	Component Name	1000 U	5000 U
	Taq HS DNA polymerase (5U/μl)	200 μl	1000 μl
b	10X Taq HS Buffer (Mg ²⁺ plus)	4 ml	20 ml
c	dNTP Mix (10 mM each)	800 μl	4 ml

Storage and Stability

Store at -30°C ~ -15°C and transport at ≤0°C. To avoid repeated handling and multiple freeze/thaw cycles aliquot product into smaller quantities.

Scientific Background

Taq HS DNA polymerase is a hot-start Taq polymerase obtained by mixing Champagne Taq antibody with Taq DNA polymerase in an optimal ratio. Due to the unique thermostability of the Champagne Taq antibody, the activity of Taq HS DNA polymerase is blocked at temperatures up to 55°C, which minimizes non-specific amplification during mixing and system heating. When the reaction is kept at 95°C for more than 30 sec, Champagne Taq antibody is completely inactivated and Taq enzyme activity is completely restored, ensuring that the PCR system has extremely high amplification sensitivity and specificity. The activation of Taq HS DNA polymerase is not affected by pH, ionic strength, etc. It is applicable for various hot-start PCRs and qPCR based on Taq DNA polymerase and can be used to amplify genes with low copy numbers from complex templates (genome and cDNA). It is the hot-start Taq enzyme of choice for PCR/qPCR molecular diagnostic reagents. This product is suitable for amplification of animal DNA, plant DNA, microbial DNA, etc.

Activity

The activity of Taq HS DNA polymerase was determined to be 5 Units/μl.

Unit Definition:

One unit (U) is defined as is defined as the amount of enzyme that incorporates 10 nmol of dNTP into acid-insoluble material in 30 min at 74°C, with activated salmon sperm DNA as the template/primer.

This product is manufactured in an ISO 9001 and ISO 13485 certified facility.

Taq HS DNA Polymerase

Catalog #

TQ03-E311

Lot #

1S2476-2

Activity

5 U/μl

Stability

18 months at -30°C ~ -15°C from date of shipment

Storage & Shipping

Store at -30°C ~ -15°C. To avoid repeated handling and multiple freeze/thaw cycles aliquot product into smaller quantities. Transport at ≤0°C.

To place your order, please contact us by phone 1-778-326-0223 or 1-888-606-3424 (Toll free) or by email: orders@signalchemdx.com or info@signalchemdx.com - www.signalchemdx.com

FOR IN VITRO RESEARCH PURPOSES ONLY. NOT INTENDED FOR USE IN HUMANS OR ANIMALS.

PCR Protocol

1. Reaction System:

Component	50 µl system
10 × Taq HS Buffer (Mg ²⁺ plus) ^a	5 µl
dNTP Mix (10 mM each)	1 µl
Primer 1 (10 µM)	2 µl
Primer 2 (10 µM)	2 µl
Template DNA ^b	x µl
Taq HS DNA polymerase (5 U/µl) ^c	1 µl
ddH ₂ O	Up to 50 µl

- a. 1.5 - 2 mM of Mg²⁺ is optimal for most PCR amplifications. The final concentration of Mg²⁺ in the above reaction system is 2 mM. If necessary, Mg²⁺ can be further optimized in 0.2 - 0.5 mM increments using 25 mM MgCl₂.
- b. The optimal concentration for various templates is different. The recommended amount of DNA template for a 50 µl reaction is as follows:

DNA template	Amount
Human Genomic DNA	1-500 ng
<i>E. coli</i> Genomic DNA	1-100 ng
λDNA	0.1-10 ng
Plasmid DNA	0.1-10 ng

- c. Adjust the volume of enzyme between 0.25 µl and 1 µl. Increasing the concentration of enzyme can generally improve the yield, but it could also cause decreased specificity. When using other concentrations of Taq HS DNA polymerase, calculate the volume of the enzyme according to the concentration.

2. Reaction Program:

Temperature	Time	Cycle number
95°C	30 sec (Initial denaturation)	
95°C	30 sec	} 30-35 cycles
55°C*	30 sec	
72°C	60 sec / kb	
72°C	7 min (final extension)	

* Annealing temperature is based on the T_m value of the primers and is generally 3 ~ 5 °C lower than the calculated T_m value.

Primer Design Guidance:

- The last base at the 3' end of the primer should be G or C.
- Consecutive mismatches should be avoided in the last 8 bases at the 3' end of the primer.
- Avoid hairpin structures at the 3' end of the primer.
- Differences in the T_m value of the forward primer and the reverse primer should be no more than 1°C and the T_m value should be adjusted to 55°C to 65°C (Primer Premier 5 is recommended to calculate the T_m value).
- Extra additional primer sequences that are not matched with the template, should not be included when calculating the primer T_m value.
- Control the GC content of the primer to be 40% - 60%.
- The overall distribution of A, G, C and T in the primer should be as even as possible. Avoid using regions with high GC or AT contents.
- Avoid the presence of complementary sequences of 5 or more bases either within the primer or between two primers and avoid the presence of complementary sequences of 3 or more bases at the 3' end of two primers.
- Use the NCBI BLAST function to check the specificity of the primer to prevent non-specific amplification.

To place your order, please contact us by phone 1-778-326-0223 or 1-888-606-3424 (Toll free) or by email: orders@signalchemdx.com or info@signalchemdx.com - www.signalchemdx.com

FOR IN VITRO RESEARCH PURPOSES ONLY. NOT INTENDED FOR USE IN HUMANS OR ANIMALS.

SAFETY DATA SHEET

Article 1 - Product Identification

Product Name: Taq HS DNA Polymerase
Catalog # TQ03-E311

This product is sold only for research use by qualified laboratory personnel, and is not to be used as a drug, medical device, food additive, cosmetic, nor household chemical. It is not to be used in diagnostic, therapeutic, consumer, agricultural, nor pesticidal applications.

Supplier of Datasheet: SignalChem Diagnostics Inc.
 Street Address: 190-13160 Vanier Place
 City, Prov. Postal Code: Richmond, BC, V6V 2J2
 Country: Canada
 Emergency Phone: 1-888-606-3424 (Toll free)
 1-778-326-0223 (local)

Article 2 - Hazard Identification

- **WHMIS Classification:** Not WHMIS controlled.
- **GHS classification:** Not GHS classified.
- **Hazard Pictograms:** No labelling applicable.
- **Signal words:** None.
- **Hazard statements:** None.
- **Precautionary statements:** None.
- **Other hazards:** None known.

Article 3 – Composition/Information on Ingredients

Description: This product consists of the components listed below.

Component: Taq HS DNA polymerase (5U/μl)

Chemical Characterization: Mixture.

Common name	Chemical name	CAS-No.	Concentration
Glycerol	Propane-1,2,3-triol	56-81-5	≤ 40%
Tris	Tris(hydroxymethyl)aminomethane	77-86-1	≤ 15%

Component: 10X Taq HS Buffer (Mg²⁺ plus)

Chemical Characterization: Mixture.

Common name	Chemical name	CAS-No.	Concentration
Water	H ₂ O	7732-18-5	≤ 40%
Tris	Tris(hydroxymethyl)aminomethane	77-86-1	≤ 15%
Magnesium chloride hexahydrate	MgCl ₂ · 6H ₂ O	7791-18-6	≤ 5%

Component: dNTP Mix (10 mM each)

Chemical Characterization: Mixture.

Common name	Chemical name	CAS-No.	Concentration
Water	H ₂ O	7732-18-5	≤ 50%
Glycerol	Propane-1,2,3-triol	56-81-5	≤ 40%

Article 4 – First-aid Measures

- **General information:** Consult a physician by providing the SDS.
- **After inhalation:** In case of irritation by inhaling this product, move affected person to fresh air and await recovery. If irritation persists, seek immediate medical attention. If casualty cannot breathe, give artificial respiration and seek immediate medical attention.
- **After skin contact:** Immediately wash with soap and plenty of water and rinse thoroughly. Consult a physician.
- **After eye contact:** Rinse opened eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do so. Consult a physician.
- **After swallowing:** Not expected to present a significant ingestion hazard under anticipated conditions of normal use. If you feel unwell, seek medical advice.

To place your order, please contact us by phone 1-778-326-0223 or 1-888-606-3424 (Toll free) or by email: orders@signalchemdx.com or info@signalchemdx.com - www.signalchemdx.com

FOR IN VITRO RESEARCH PURPOSES ONLY. NOT INTENDED FOR USE IN HUMANS OR ANIMALS.

SAFETY DATA SHEET

Article 5 - Fire-fighting Measures

- **Suitable extinguishing media:** Use water spray, extinguishing powder, carbon dioxide, or other appropriate measure that is suitable to the environment.
- **Specific hazards arising from the substance or mixture:** None known.
- **Special protective equipment and precautions for fire-fighters:** Self-contained breathing apparatus if necessary.

Article 6 – Accidental Release Measures

- **Personal precautions, protective equipment, and emergency procedures:** Apply standard laboratory practices and personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation.
- **Environmental precautions:** Do not allow to enter drains.
- **Methods and materials for containment and cleaning up:** Absorb on sand or vermiculite and place in closed containers for disposal.

Article 7 - Handling and Storage

- **Precautions for safe handling:** Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.
- **Conditions for safe storage:** Store according to product label instructions. Keep container upright and tightly closed.

Article 8 - Exposure Controls/Personal Protection

- **Components with limit monitoring values at workplace:**
NA
- **Appropriate engineering controls:**
Apply adequate ventilation including mechanical exhaust or laboratory fume hood. Follow standard laboratory practices.
- **Individual protection measures:**
Respiratory protection:
Use appropriate respirator if there is inadequate ventilation by following the government standards.
Hand protection:
Wear gloves and use proper glove removal technique to avoid skin contact. Discard gloves after use by following the applicable laboratory regulations. Wash and dry hands.
Eye/face protection:
Safety goggles with side-shields approved under appropriate government standards.
Skin/body protection:
Use appropriate clothing, footwear and any additional protection measures to protect from splashing or contamination.

Article 9 – Physical and Chemical Properties

Component: Taq HS DNA polymerase (5U/μl)

Appearance: Colorless liquid.	Danger of explosion: Product does not present an explosion hazard.
Odour/Odour Threshold: Not determined.	Explosion limits: Not available.
pH: Not available.	Decomposition temperature: Not available.
Melting point/freezing point: Not determined.	Vapor pressure at 20 °C: Not available.
Boiling point/Boiling range: Not determined.	Density: Not determined.
Flash point: Not determined.	Relative density: Not determined.
Flammability (solid, gaseous): Not determined.	Vapor density: Not determined.
Ignition temperature: Not determined.	Evaporation rate: Not determined.
Auto-igniting: Product is not self-igniting.	Solubility in / Miscibility with Water: Fully miscible.

Component: 10X Taq HS Buffer (Mg²⁺ plus)

Appearance: Colorless liquid.	Danger of explosion: Product does not present an explosion hazard.
Odour/Odour Threshold: Not determined.	Explosion limits: Not available.
pH: Not available.	Decomposition temperature: Not available.
Melting point/freezing point: Not determined.	Vapor pressure at 20 °C: Not available.
Boiling point/Boiling range: Not determined.	Density: Not determined.
Flash point: Not determined.	Relative density: Not determined.
Flammability (solid, gaseous): Not determined.	Vapor density: Not determined.
Ignition temperature: Not determined.	Evaporation rate: Not determined.
Auto-igniting: Product is not self-igniting.	Solubility in / Miscibility with Water: Fully miscible.

To place your order, please contact us by phone 1-778-326-0223 or 1-888-606-3424 (Toll free) or by email: orders@signalchemdx.com or info@signalchemdx.com - www.signalchemdx.com

FOR IN VITRO RESEARCH PURPOSES ONLY. NOT INTENDED FOR USE IN HUMANS OR ANIMALS.

SAFETY DATA SHEET

Component: dNTP Mix (10 mM each)

Appearance: Colorless liquid.	Danger of explosion: Product does not present an explosion hazard.
Odour/Odour Threshold: Not determined.	Explosion limits: Not available.
pH: Not available.	Decomposition temperature: Not available.
Melting point/freezing point: Not determined.	Vapor pressure at 20 °C: Not available.
Boiling point/Boiling range: Not determined.	Density: Not determined.
Flash point: Not determined.	Relative density: Not determined.
Flammability (solid, gaseous): Not determined.	Vapor density: Not determined.
Ignition temperature: Not determined.	Evaporation rate: Not determined.
Auto-igniting: Product is not self-igniting.	Solubility in / Miscibility with Water: Fully miscible.

Article 10 - Stability and Reactivity

- **Reactivity:** Stable under recommended transport and storage conditions.
- **Chemical stability:** Stable under recommended transport and storage conditions.
- **Possible hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** Heat and moisture.
- **Incompatible materials:** Not determined.
- **Hazardous decomposition products:** Not determined.

Article 11 - Toxicological Information

- **Acute toxicity:** Not available.
- **LD/LC50:** Not available.
- **Skin corrosion/irritation:** Not available.
- **Serious eye damage/eye irritation:** Not available.
- **Respiratory or skin sensitization:** Not available.
- **Germ cell mutagenicity:** Not available.
- **Carcinogenicity:** No components are listed in IARC, or NTP, or OSHA, or ACGIH.
- **Reproductive toxicity:** Not available.
- **Teratogenicity:** Not available.
- **Specific target organ toxicity - single exposure/ - repeated exposure (GHS):** Not available.
- **Aspiration hazard:** Not available.
- **Potential health effects:**
 - Inhalation: No data available
 - Ingestion: No data available
 - Skin: No data available
 - Eyes: No data available
- **Signs and Symptoms of Exposure:** No data available
- **Synergistic effects:** Not available.

Article 12 - Ecological Information

- **Eco-toxicity:** No data available.
- **Biodegradability:** Not applicable.
- **Bio-accumulative potential:** Not applicable.
- **Mobility in soil:** Not applicable.
- **PBT and vPvB assessment:** Not applicable.
- **Other adverse effects:** Not applicable.

Article 13 - Disposal Considerations

- **Disposal methods:** In accordance to applicable national, regional, or local laws and regulations. For additional handling information and protection of employees please refer to Article 7 and 8.
- **Contaminated packaging:** Disposal should be made in accordance to official regulations. Use water or cleansing agents to clean the area.

Article 14 - Transport Information

- **DOT:** Not dangerous goods.
- **IMDG:** Not dangerous goods.
- **IATA:** Not dangerous goods.

To place your order, please contact us by phone 1-778-326-0223 or 1-888-606-3424 (Toll free) or by email: orders@signalchemdx.com or info@signalchemdx.com - www.signalchemdx.com

FOR IN VITRO RESEARCH PURPOSES ONLY. NOT INTENDED FOR USE IN HUMANS OR ANIMALS.

SAFETY DATA SHEET

Article 15 – Regulatory Information

- **WHMIS Classification:** Non-hazardous.
 - **GHS label elements:** Not applicable.
 - **Signal word:** Not applicable.
 - **Hazard statements:** Not applicable.
-

Article 16 - Other Information

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. SignalChem shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalog for additional terms and conditions of sale.

To place your order, please contact us by phone 1-778-326-0223 or 1-888-606-3424 (Toll free)
or by email: orders@signalchemdx.com or info@signalchemdx.com - www.signalchemdx.com

FOR IN VITRO RESEARCH PURPOSES ONLY. NOT INTENDED FOR USE IN HUMANS OR ANIMALS.