



Tte UvrD Helicase

Manual

Catalog #	3711	3713
Package Size	2 µg	40 µg
Concentration	20 µg/mL	20 µg/mL
Volume	100 µL	2 mL



Important!

-20°C Storage Required

- * Immediately inspect packages
- * Freeze upon receipt



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Intact Genomics, Inc.

Tte UvrD Helicase

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Description:

Tte UvrD is a thermostable, ATP-dependent DNA helicase derived from the thermophilic bacterium *Thermoanaerobacter tengcongensis* (Tte). The enzyme unwinds double-stranded DNA (dsDNA), generating single-stranded DNA (ssDNA) that can be accessed by other proteins, enzymes, primers, and probes.

Intact Genomics Tte UvrD is a key enzyme used in helicase-dependent amplification (HDA)¹. In HDA, Tte UvrD separates complementary DNA strands to generate single-stranded templates, allowing primer hybridization and DNA polymerase extension without the thermal cycling required for PCR. Studies have also shown that HDA may use the same primer sequences designed for PCR, helping simplify assay development².

Tte UvrD is a thermostable enzyme that originates from a thermophilic organism and it is active at temperatures up to 65 °C. It is suitable for HDA, DNA-unwinding studies, helicase activity assays, isothermal nucleic acid amplification, and other molecular biology applications requiring enzymatic strand separation.

Applications:

- Helicase-dependent amplification (HDA)
- Isothermal nucleic acid amplification
- DNA strand-unwinding studies
- Helicase activity assays
- Probe- and primer-based DNA detection workflows

Benefits:

- Thermostable and active at temperatures up to 65 °C
- Generates single-stranded DNA without thermal cycling
- Supports primer hybridization and DNA polymerase extension
- May be used with PCR-designed primers, simplifying assay development
- Suitable for research and diagnostic assay development

Source:

Recombinant UvrD expressed from a plasmid carrying the thermostable UvrD gene from *Thermoanaerobacter tengcongensis*.

Specifications:

- Purified recombinant Tte UvrD helicase
- Molecular weight: 83 kDa
- Free of detectable endonuclease activity

Product Components and Storage Temperature:

IG Cat #	Package Size	Component Name	IG Part #	Amount	Concentration	Storage
3711	2 µg	Tte UvrD Helicase	P241258	1 × 100 µL	20 µg/mL	-20 °C
		10X Helicase Reaction Buffer	P241266	1 × 1 mL	10X	-20 °C
		10 mM Adenosine Triphosphate (ATP)	P241270	1 × 50 µL	10 mM	-20 °C
3713	40 µg	Tte UvrD Helicase	P241262	2 × 1 mL	20 µg/mL	-20 °C
		10X Helicase Reaction Buffer	P241266	1 × 1 mL	10X	-20 °C
		10 mM Adenosine Triphosphate (ATP)	P241274	1 × 200 µL	10 mM	-20 °C

Quality Control:

Nuclease Activity: DNA integrity is evaluated after overnight incubation with concentrated enzyme. The DNA must remain intact, with no detectable degradation, compared with a no-enzyme control.

Enzyme Activity: At 24 nM (2 ng/µL), the enzyme must pass both ATPase and fluorescence-based helicase activity assays and demonstrate performance comparable to an approved UvrD batch-control standard.

Protocol for DNA Helicase Activity:

The UvrD reaction measures ATP-dependent unwinding of complementary DNA strands.

1. Set up the reaction according to the table below.

Reagent	µL of Sample
Template dsDNA	X (up to 1 µg)
Nuclease-Free H ₂ O	15-X
10x Helicase Buffer	2
10 mM ATP	2
Tte UvrD Helicase	1

Total Volume: 20 µL

2. Incubate the reaction mixture at 65 °C for 20 minutes. The incubation time and temperature may be adjusted for different applications. Typical conditions range from 42–68 °C for 10–60 minutes. Note that ATP hydrolysis can limit helicase activity at higher temperatures.
3. To inactivate the enzyme, incubate the reaction at 80 °C for 5 minutes.

References:

1. An, L. *et al.* Characterization of a Thermostable UvrD Helicase and Its Participation in Helicase-dependent Amplification *. *Journal of Biological Chemistry* 280, 28952–28958 (2005).
2. Gavrilov, M. *et al.* Engineered helicase replaces thermocycler in DNA amplification while retaining desired PCR characteristics. *Nat Commun* 13, 6312 (2022).

Related Products:

- igSuper™ Tte UvrD Helicase (Cat.# 3717, 3719)
- Tte MutL Protein (Cat.# 3722, 3724)
- IG® RPA Master Mix (Cat.# 3545, 3547)
- IG® RPA Kit v2 (Cat.# 3533, 3534)
- T4 UvsX DNA Recombinase (Cat.# 3562, 3565)
- T4 UvsY Protein (Cat.# 3572, 3575)

Ordering Information:

- Order online within the USA. Place orders on **www.intactgenomics.com** using our secure Shopping Cart.
- Order by email, phone, or fax.
Email: **sales@intactgenomics.com**
Phone: (314) 942-3655 | Toll-free : 855-835-7172 | Fax: (314) 942-3656
- Order via our distributors.



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