

T4 DNA Ligase

ArcticZymes T4 DNA Ligase is an ATP and Mg²⁺ dependent dsDNA ligase which catalyses the formation of a phosphodiester bond between 3'-hydroxyl and 5'-phosphate termini in duplex DNA, duplex RNA, and some DNA/RNA hybrids. The enzyme is recombinantly produced in *E. coli*.

T4 DNA Ligase is active on both blunt-end and cohesive-end substrates. It is also completely inactivated by incubating at 70°C for 10 minutes.

T4 DNA Ligase is extensively tested for contaminating DNase and RNase activities as well as residual host-cell gDNA.

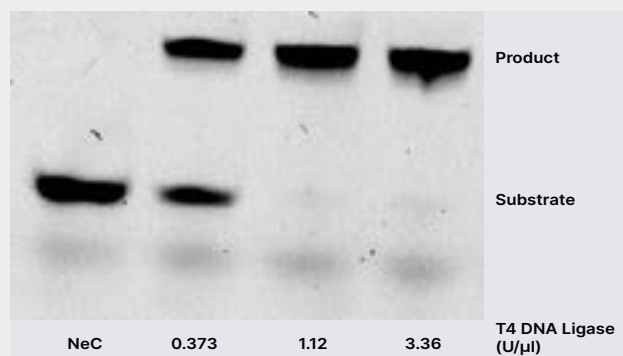


Fig 1. T4 DNA Ligase displays good nick-joining activity of dsDNA

T4 DNA Ligase activity on various substrates. *In vitro* assays of ligation activity were performed using three oligos hybridised into a nicked 20 bp dsDNA substrate. Efficient DNA ligation was observed after 30 min at 25°C when using 1.12 U/μl T4 DNA Ligase. At 0.373 U/μl T4 DNA Ligase showed about 70% substrate turnover.

Specifications

Optimal reaction conditions	50 mM Tris-HCl (pH 7.5 at 25°C), 10 mM DTT, 5 mM MgCl ₂ and 1 mM ATP.
Storage buffer	10 mM Tris-HCl pH 7.5 at 25°C 50 mM KCl 1 mM DTT 0.1 mM EDTA 50% (v/v) Glycerol
Stability	The enzyme is stable for at -20°C for 1 year in the supplied storage buffer. The enzyme tolerates a minimum of four freeze-thaw cycles (-80°C) without loss of activity.

Quality control

dsDNA endonuclease activity	10 000 U T4 DNA Ligase was incubated with a supercoiled plasmid (1 μg) for 4 hours at 37°C. Agarose gel electrophoresis did not reveal any transformation of closed circular DNA to nicked DNA.
ssDNA endonuclease activity	10 000 U T4 DNA Ligase was incubated with M13 ssDNA (0.5 μg) for 4 hours at 37°C. Agarose gel electrophoresis did not reveal any visible signs of ssDNA degradation.
Exonuclease activity	10 000 U T4 DNA Ligase was incubated with either 3H-dATP labelled ds or ssDNA (0.5 μg, 500 bp) for 4 hours at 37°C. Acid soluble radioactivity from labelled DNA was not significantly over blank test for either substrate.
RNase activity	5000 U T4 DNA Ligase was incubated with a 2 kb RNA transcript (1 μg) for 4 hours at 37°C. Agarose gel electrophoresis did not reveal any visible signs of RNA degradation.
<i>E. coli</i> gDNA contamination	5000 U T4 DNA Ligase was analysed in a probe-based qPCR assay detecting the 23S ribosomal subunit in <i>E. coli</i> . No <i>E. coli</i> gDNA could be detected (LOD: < 3 <i>E. coli</i> genomic copies.).

Ordering information

	Article no.	Pack size*	Concentration
T4 DNA Ligase	71800-202	250 kU	≥ 5000 U/μl
	71800-100	Custom	Custom

* 0.1 units is defined as the amount of enzyme that is needed to convert 1 pmol (of 18 pmol) of nicked DNA substrate in 20 minutes at 25°C in a 20 μl reaction volume in a buffer consisting of 62.5 mM Tris-HCl pH 7.5, 10 mM DTT, 1 mM ATP, 0.05 mg/ml BSA and 25 mM KCl. One Weiss Unit is equivalent to approximately 500 ArcticZymes Units.

Your OEM Partner to deliver novel solutions for genomics and proteomics.

Quality

ArcticZymes is dedicated to the quality of our products and certified according to ISO 13485:2016. ArcticZymes offers the convenience of providing standard bulk enzymes as off the shelf products. In addition, ArcticZymes offers enzymes in customized formats. For additional information, please contact us.

Additional information

We are pleased to provide data and information relating to T4 DNA Ligase. Available data includes stability, buffer storage conditions, pH, specific activity data. For more information, please check our website www.arcticzymes.com.

ArcticZymes Technologies ASA

Sykehusveien 23
N-9294 Tromsø, Norway

T (47) 7764 8900
E contact@arcticzymes.com
I www.arcticzymes.com

ArcticZymes Technologies ASA

987 Old Eagle School Road, Suite 709
Wayne, PA 19087, USA

T (484) 534 3567
F (484) 368 3558
E contact-us@arcticzymes.com

ArcticZymes AS

Handelswei 1A 8501 XJ
Joure, the Netherlands

T (47) 7764 8900
E contact@arcticzymes.com
I www.arcticzymes.com

Disclaimer: These products are intended for further manufacturing use or research use only. Certain applications of ArcticZymes Technologies ASA products may require licenses from others. It is the expressed duty of any receiver of ArcticZymes Technologies ASA products to acquire such licenses, if necessary. To the extent allowed by law, ArcticZymes Technologies ASA will not be liable for damages, whether direct, indirect, incidental, or consequential in connection with or arising from this document, including the use of it. ArcticZymes Technologies ASA products may be covered by pending or issued patents, designs or design applications and/or trademarks or trademark applications or any other registered or unregistered Intellectual Property Right. Version 2.2 • May 2022