

# T4 DNA Ligase

ArcticZymes T4 DNA Ligase is an ATP and  $Mg^{2+}$  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.

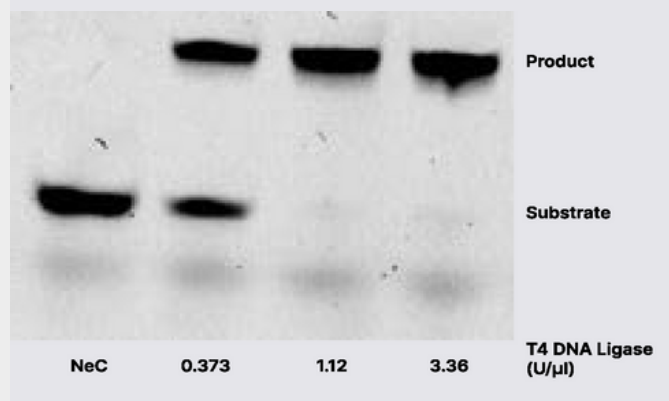


Fig 1. T4 DNA Ligase displays good nick-joining activity of dsDNA

**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.

## Quality control

<b>Optimal reaction conditions</b>	50 mM Tris-HCl (pH 7.5 at 25°C), 10 mM DTT, 5 mM $MgCl_2$ and 1 mM ATP.
<b>Storage buffer</b>	10 mM Tris-HCl pH 7.5 at 25°C 50 mM KCl 1 mM DTT 0.1 mM EDTA 50% (v/v) Glycerol
<b>Stability</b>	The enzyme is stable 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

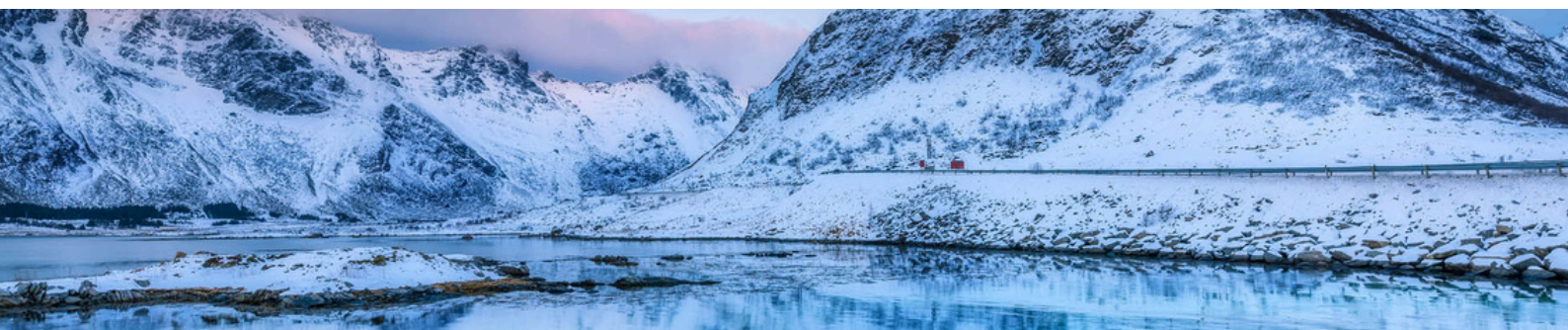
## Quality control

<b>dsDNA endonuclease activity</b>	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.
<b>ssDNA endonuclease activity</b>	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.
<b>Exonuclease activity</b>	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.
<b>RNase activity</b>	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.
<b><i>E. coli</i> gDNA contamination</b>	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
<b>T4 DNA Ligase</b>	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 its products and is 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.

### Contact information

#### ArcticZymes Technologies ASA

Sykehusvegen 23  
9019 Tromsø, Norway

**T** +47 7764 8900

**E** [contact@arcticzymes.com](mailto:contact@arcticzymes.com)

**I** [www.arcticzymes.com](http://www.arcticzymes.com)

### Additional Information

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

**Disclaimer:** ArcticZymes Technologies ASA, including its subsidiaries, ("ArcticZymes") products are intended for the further use of in manufacturing new products or research only. Certain applications of ArcticZymes' products may require licenses from third parties. It is the express duty of any receiver of our products to acquire such licenses, if necessary. To the maximum extent allowed by law, ArcticZymes will not be accountable or liable for any damages, whether direct, indirect, incidental, or consequential, in connection with or arising from this document, including the use of it. ArcticZymes 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. For the avoidance of doubt, the General Conditions of ArcticZymes shall apply with respect to any and all purchases and use of the ArcticZymes products. Version 2.3 • Aug 2025