**T4 RNA Ligase 1 (ssRNA Ligase), High Concentration**

**M0437M**

| 5,000 units | 30,000 U/ml | Lot: 0591602 |
| RECOMBINANT Store at –20°C | Exp: 2/18 |

**Description:** T4 RNA Ligase 1 catalyzes the ligation of a 5’ phosphoryl-terminated nucleic acid donor to a 3’ hydroxyl-terminated nucleic acid acceptor through the formation of a 3’ → 5’ phosphodiester bond, with hydrolysis of ATP to AMP and PP. Substrates include single-stranded RNA and DNA as well as dinucleoside pyrophosphates.

**Source:** An *E. coli* strain that carries the T4 RNA Ligase 1 gene

**Applications:**
- Ligation of ss-RNA and DNA
- Labeling of 3’-termini of RNA with 5’-[32P]pCp
- Inter- and intramolecular joining of RNA and DNA molecules
- Synthesis of single-stranded oligodeoxynucleotides
- Incorporation of unnatural amino acids into proteins

**Reagents Supplied with Enzyme:**
- 1X T4 RNA Ligase Reaction Buffer, 100 mM ATP and 50% PEG 8000.

**Reaction Conditions:** 1X T4 RNA Ligase Reaction Buffer, supplemented with 1 mM ATP. Incubate at 37°C.

**Unit Definition:** One unit is defined as the amount of enzyme required to convert 1 nanomole of 5’-[32P]pCp into a phosphatase-resistant form in 30 minutes at 37°C.

**Quality Control Assays**

**RNase Assay:** Incubation of a 10 µl reaction containing 20 units of T4 RNA Ligase 1 with 40 ng of RNA transcript for 2 hours at 37°C resulted in no detectable degradation of the RNA as determined by gel electrophoresis.

**DNA Exonuclease Activity:** Incubation of 20 units of T4 RNA Ligase 1 with 1 µg of mixed single and double-stranded sonicated ^3H DNA (100 cpm/µg) in 50 µl T4 RNA Ligase Reaction Buffer for 4 hours at 37°C released < 0.1% of the activity.

**DNA Endonuclease Activity:** Incubation of 20 units of T4 RNA Ligase 1 with 1 µg of mixed single and double-stranded sonicated ^3H DNA (100 cpm/µg) in 50 µl T4 RNA Ligase Reaction Buffer for 4 hours at 37°C resulted in no detectable degradation of DNA as determined by agarose gel electrophoresis.

**Notes on Use:** Addition of DMSO to 10% (v/v) is required for pCp ligation.

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