

T7 RNA Polymerase

Product codes:

F-617S, 3 000 U

F-617L, 15 000 U

Stable for one year from the assay date. Store at -20°C.

1. Description

T7 RNA Polymerase is a DNA-dependent RNA polymerase coded by the bacteriophage T7. This enzyme catalyzes efficient synthesis of single-stranded RNA in 5'→3' direction, and has a stringent specificity for double-stranded T7 promoter sequence. T7 RNA Polymerase can be used for *in vitro* transcription, preparation of labeled RNA and synthesis of RNA for *in vitro* translation.

2. Package information

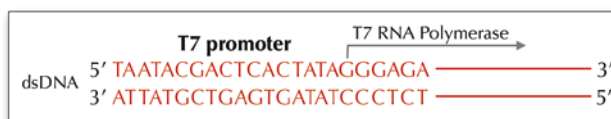
F-617S	3 000 U Material provided: T7 RNA Polymerase (50 U/μl) 10x T7 RNA Polymerase Buffer (1.5 ml)
F-617L	15 000 U Material provided: T7 RNA Polymerase (50 U/μl) 10x T7 RNA Polymerase Buffer (1.5 ml)

Material safety data sheet (MSDS) is available at www.finnzymes.com.

3. Guidelines for using T7 RNA Polymerase

Use a DNA template with a T7 RNA promoter sequence (Figure 1). If the template is a plasmid, it must be sufficiently purified to avoid RNase contamination. The DNA template should be restricted to the desired length either by PCR or linearization. Alternatively, the T7 RNA polymerase termination sequence can be utilized to terminate the transcription.

Figure 1. T7 promoter sequence



Supplement the reaction with 0.5 mM of ATP, UTP, GTP and CTP each. Incubate at 37°C for at least 1–3 hours. Increasing the incubation time usually improves the yield.

4. Component specifications

T7 RNA Polymerase is purified from an *E. coli* strain that carries the cloned gene 1 from bacteriophage T7.

Storage buffer: 50 mM Tris-HCl (pH 7.9 at 25°C), 1 mM EDTA, 100 mM NaCl, 0.1 % Triton® X-100, 5 mM dithiothreitol and 50 % glycerol.

Reaction buffer: T7 RNA Polymerase is supplied with 10x T7 RNA Polymerase Buffer. 1x buffer contains: 40 mM Tris-HCl (pH 7.9 at 25°C), 6 mM MgCl₂, 10 mM dithiothreitol and 2 mM spermidine.

Unit definition: One unit is defined as the amount of enzyme that incorporates 1 nmol of UTP into acid-insoluble form at 37°C in 60 minutes in the following reaction mixture:

40 mM Tris-HCl (pH 7.9 at 25°C), 6 mM MgCl₂, 10 mM dithiothreitol, 2 mM spermidine, 0.5 mM each ATP, CTP, GTP and UTP, 500 ng bacteriophage T7 DNA and 1 μCi [³H]-UTP per 30 μl reaction volume.

Exonuclease contamination assay: Incubation of 100 U of T7 RNA Polymerase (4 hours, 37°C, 50 μl) with 1 μg of sonicated [³H]-ssDNA (3x10⁵ cpm/μg) in the assay buffer released <0.1 % of radioactivity.

Endonuclease contamination assay: Incubation of 100 U of T7 RNA Polymerase (4 h, 37°C, 50 μl) with 1 μg of ΦX174 RFI DNA in the assay buffer gave <10 % conversion to RFI form.

Ribonuclease assay: Incubation of 100 U of T7 RNA Polymerase (1 h, 37°C, 50 μl) with 1 μg of single-stranded MS2 RNA resulted in a similar RNA pattern as produced without the enzyme.

Storage and shipping

T7 RNA Polymerase is shipped on ice. Upon arrival, store the components at -20°C. T7 RNA Polymerase is stable for one year from the assay date when stored and handled properly.

Warranty

Finnzymes Oy warrants that its products will meet the specifications stated on the technical data section of the data sheets, and Finnzymes Oy agrees to replace the products free of charge if the products do not conform to the specifications. Notice for replacement must be given within 60 days of receipt. In consideration of the above commitments by Finnzymes Oy, the buyer agrees to and accepts the following conditions:

- That this warranty is in lieu of all other warranties, express or implied;
- That ALL WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED AND WAIVED;
- That the buyer's sole remedy shall be to obtain replacement of the product free of charge from Finnzymes Oy; and
- That this remedy is in lieu of all other remedies or claims for damages, consequential or otherwise, which the buyer may have against Finnzymes Oy.

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Recommended guidelines for safe use of the products

Finnzymes Oy recommends that the buyer and other persons using the products follow the Guidelines for Research involving Recombinant DNA molecules (NIH guidelines) Federal Register, July 5, 1994 (59 FR 34496)

and any amendments thereto. Finnzymes Oy disclaims any and all responsibility for any injury or damage which may be caused by the failure of the buyer or any other person to follow said guidelines. The material safety datasheet for this product is available at www.finnzymes.com.

Research use only

Since these products are intended for research purposes by qualified persons, the Environmental Protection Agency does not require us to supply Premanufacturing Notice.

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The quality system of Finnzymes Oy is certified according to standard SFS-EN ISO9001:2008.

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