Q-Beta Replicase

Cat. No. QB501250

Q-Beta Replicase is an RNA-directed RNA Polymerase that is responsible for replication of the coliphage Q-Beta RNA genome. Various aspects of the enzyme are presented in a review by Blumenthal and Carmichael.\(^1\) The enzyme is composed of four subunits, one encoded by the Q-Beta phage and three by the *E. coli* host. Epicentre’s Q-Beta Replicase is purified from *E. coli* containing a plasmid that expresses the phage-encoded subunit. All four enzyme subunits are present in equal proportions (Fig. 1).

*In vitro*, Q-Beta Replicase can utilize other RNA molecules besides the Q-Beta phage RNA as template. These include various subgenomic variant RNA molecules found in Q-Beta Replicase reactions, such as midivariant (MDV) RNAs and other smaller variant RNAs.\(^2\) In addition, the enzyme can also use other “non-natural” templates, such as poly(rC), RNA primed with an oligonucleotide or RNA molecules tailed with several C residues.

Q-Beta Replicase is provided at a concentration of 1 U/μl in a 250 Unit size.

**Product Specifications**

**Storage:** Store at –20°C in a freezer without a defrost cycle.

**Storage Buffer:** Q-Beta Replicase is supplied in a 50% glycerol solution containing 50 mM Tris-HCl (pH 7.5), 0.1 M NaCl, 1 mM dithiothreitol (DTT), 0.1 mM EDTA and 0.1% Triton® X-100.

![Figure 1. SDS-PAGE of Q-Beta Replicase.](image-url)
**Q-Beta Replicase**

**Unit Definition:** One Unit of Q-Beta Replicase catalyses the incorporation of 1 nmol of rGTP into poly(G) in 10 minutes at 30°C using 20 ng/μl of poly(C) as a template in a reaction mixture containing 33 mM Tris-acetate (pH 7.5), 66 mM potassium acetate, 10 mM magnesium acetate, 0.5 mM DTT and 1 mM rGTP.

**10X Reaction Buffer:** (10X TA Buffer) is 330 mM Tris-acetate (pH 7.5), 660 mM potassium acetate, 100 mM magnesium acetate and 5 mM DTT (sold separately).

**Quality Control:** The physical purity of Q-Beta Replicase is >95% as determined by SDS polyacrylamide gel electrophoresis. All four subunits are present in equal amounts. Enzymatic activity is tested using polyribocytidylic acid as a template. Q-Beta Replicase incubated in the presence of rNTPs with no template present must not generate RNA transcripts by gel analysis.

**Contaminating Activity Assays:** Q-Beta Replicase is free of detectable exo- and endonuclease, and RNase activities.

**Related Products:** The following products are also available:

- NTP Solutions
- 10X TA Buffer

**References:**


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