

## Thermostable dUTPase - Purified

**Catalog No.:** AR10124PU-L

**Quantity:** 2 kIU

**Background:** Thermostable dUTPase (pyrococcus furiosus) maximizes the efficiency of high-fidelity PCR (using proofreading DNA polymerases). It removes contaminating dUTP present in PCR reactions and dNTP solutions. The presence of dUTPase in a proofreading DNA polymerase reaction can prevent dUTP misincorporation by maintaining dUTP levels below their inhibitory concentrations despite the constant generation of the molecule by the spontaneous deamination of dCTP. The incorporation of dUTP into PCR products causes mutations within the amplified product, proofreading polymerases to stall and slows down non-proofreading polymerases such as Taq. The dUTPase increase in PCR product yield, length and fidelity enables further down-stream applications. These effects make dUTPase useful in PCR fidelity and yield-sensitive applications such as cloning and subsequent recombinant protein technology, and gene expression analysis (semi-quantitative RT-PCR techniques and real-time PCR analysis), where small differences in product accumulation can have a significant impact on gene expression analysis. dUTPase is specific for dUTP and is critical for the fidelity of DNA replication and repair. dUTPase hydrolyzes dUTP to dUMP and pyrophosphate, simultaneously reducing dUTP levels and providing the dUMP for dTTP biosynthesis.

**Source:** E. coli

**Format:** **State:** Liquid sterile filtered protein

**Purity:** >97.0% as determined by:

(a) Analysis by RP-HPLC.

(b) Analysis by SDS-PAGE.

**Buffer System:** 20mM Tris-HCl (pH 8.2), 1mM DTT, 0.1mM EDTA, 100mM KCl, 0.1% Nonidet P40, 0.1% Tween 20 and 50% Glycerol at concentration of 10 µg/µl of the enzyme.

**Description:** Recombinant Thermostable dUTPase.

**Biological Activity:** (A) Measured by its ability to hydrolyze dUTP to dUMP in reaction buffer 20mM Hepers pH7.5, 150mM KCl, 5mM MgCl<sub>2</sub>, 10mM dUTP at 85 Centigrade for 1 hour. The PPI production was quantified by using the enzymatic determination kit from Sigma.

(B) Enhancing PCR amplification: 50ul of Pfu PCR reaction system with 1-3u of dUTPase (<3.0kb) or 4-6u dUTPase (>3.0kb) to amplify genomic DNA target up to 15-19 kb in length. (High concentrations of dUTPase will inhibit PCR reaction!)

**Unit Definition:** One unit of enzyme catalyzes hadrylization of 10 nanomoles of dUTP to dUMP in one hour at 85 Centigrade.

**Specific Activity:** 10<sup>3</sup>u/ug

**Storage:** Store the antigen at 2-8°C for 2 weeks or at -20°C for longer.

Avoid repeated freezing and thawing.

Shelf life: One year from despatch.