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Eurogentec

Technical **Data Sheet**

HGS Diamond *Taq*® DNA Polymerase 5 u/µl

TAQ-I011-1000+ | TAQ-I011-5000+ | TAQ-I011-25000-
[1000 U] [5000 U] [5x5000 U]

Eurogentec products are sold for research, laboratory or diagnostic use only and are not to be administrated to humans.

Source

HGS Diamond *Taq*® is a highly thermostable enzyme produced and purified from recombinant *Escherichia coli* bacterium containing the *Thermus aquaticus* DNA Polymerase gene.

Intended use

HGS Diamond *Taq*® is a chemically modified Hot Start *Taq* DNA polymerase, which is devoid of any activity before activation to avoid non-specific priming at low temperature. The enzyme catalyzes 5'->3' polymerization with good fidelity and harbors 5'-3' FEN activity with no detectable 3'->5' exonuclease activity. This enzyme requires a 10 minutes activation step at 95°C to reach maximal initial activity. During the PCR the rest of its activity is released. DNA fragments as long as 2 kb can be efficiently amplified. HGS Diamond *Taq*® DNA polymerase provides efficient amplification of specific products without amplifying non-specific products or primer dimers. HGS Diamond *Taq*® is particularly suited for diagnostic PCR & qPCR applications that require high sensitivity and ultra low levels of bacterial & fungal and/or highly specific amplification. The GMP compliant manufacturing & purification processes minimize the risk of false positive results due to residual DNA contamination (bacterial or fungal). The enzyme is QC-tested to verify that < 1 fg of genomic *E. coli* DNA (or 0.2 copy) is present in a standard aliquot containing 1 unit of Taq. Bioburden is guaranteed ≤10 CFU/ml, but is typically = 0 CFU/ml.

Package contents

Reference	Units	Volume	Concentration	Volume HGS Diamond Taq® reaction buffer (10 X)	Volume 25 mM $MgCl_2$
TAQ-I011-1000+	1000	200 µl	5 U/µl	6 ml	6 ml
TAQ-I011-5000+	5000	1 ml	5 U/µl	3 ml	30 ml

Shipping conditions

Shipping under Dry ice.

Storage conditions

For long term storage the HGS Diamond Taq should be stored at a temperature between -15 °C and -25°C in a constant temperature freezer. When stored under these conditions, the components are stable for 48 months. (For short term storage the Diamond Taq can be stored at 4 °C for 6 months).

Storage and dilution buffer

20 mM Tris-HCl, 1 mM DTT, 0.1 mM EDTA, 0.1 M KCl, 0.5% (v/v) Nonidet P40, 0.5% (v/v) Tween 20, 50% (v/v) glycerol, pH 8.0 (19°C).

Enzyme Specifications

Each lot of enzyme, buffer and $MgCl_2$ is functionnaly tested and quality controlled.
More information is available online.

Unit definition

One unit is defined as the amount of enzyme that incorporates, after activation step, 10 nmoles of dNTPs into acid insoluble form in 30 minutes at 74 °C.

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Reaction Conditions (Prepare on ice)

For a 50 µl Reaction

Diamond *Taq*® Reaction Buffer (10x)	5 µl
$MgCl_2$ solution	3 µl (1.5 mM)
Diamond *Taq*®	0.4 to 1.25 units
dNTP	200 µM each dNTP
Primers	0.05 nmol each
H_2O	As required
DNA template	As required

Magnesium

This DNA polymerase is a magnesium-dependent enzyme. Optimal concentration ranges from 1.5 to 2.0 mM. However, best performance may require supplementing magnesium concentration in 0.5 increments, up to 4.0 mM.
Excess Mg^{2+} stabilizes the DNA double strand and consequently prevents complete denaturation of DNA, which reduces the extension yield. It may also stabilize spurious primer/template annealing, thus decreasing specificity.

Cycling conditions

Classical PCR protocol used for 500 bp lambda DNA amplification*

Steps	T° C	Time	Comments
Enzyme activation + DNA denaturation	95°C	10 min	-
PCR cycle : 25 cycles			
Denaturation	94°C	30 sec	From 5 sec for simple templates like linearized plasmids up to 1 min for plant genomic DNA
Annealing	Tm –2°C	30 sec	Optimize from Tm -4°C to +2°C
Extension	72°C	1 min/kb	-
	72°C	7 min	-
	4°C end temperature	-	-

**Condition will vary from reaction to reaction and may need optimization for maximal performances. Duration and temperature for denaturation and annealing steps depend on the type of cycler and primers design. We advise you to check primer design and melting temperature (Tm) by using primer design software.*

Disclaimer

For further information please contact our Customer Help Desk:

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