

Data sheet

Order No. BS91.218.0050 Order No. BS91.218.0200 Order No. BS91.218.1000 Order No. BS91.218.5000 50 Units 200 Units 1000 Units 5000 Units

(For research and *in vitro* applications only)

Batch-No.:

Best before:

Appearance:

Colour:

Bio&SELL		
Lohweg 27	E-Mail: <u>info@bio-sell.de</u>	Fon : +49 (0) 9128 – 724 32 32
90537 Feucht bei Nürnberg	Internet: www.bio-sell.de	Fax : +49 (0) 9128 – 724 32 33



Description

The Bio&SELL S-Dis polymerase is a thermostable polymerase with a strong strand displacement activity.

The S-Dis polymerase achieves excellent results in all methods of DNA amplification (LAMP, PCR, PCDR). Because unlike the naturally occurring enzymes with a strong strand displacement activity (Bst or Phi29 polymerase) that are active only until 68 °C, this novel polymerase is stable up to 93 °C.

Solutions and reaction buffer

- S-Dis polymerase reaction buffer (10x)
- Complete KCI reaction buffer (10x)
- MgCl₂-solution (100 mM) (Recommended MgCl₂-final concentration 3-4mM)

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Scope of delivery

	200 Units	1000 Units	5000 Units
S-Dis polymerase reaction buffer (10x)	1.8 ml	2 x 1.8 ml	5 x 1.8 ml
complete KCl reaction buffer** (10x)	1.8 ml	2 x 1.8 ml	5 x 1.8 ml
MgCl ₂ -solution*** (100 mM)	1 ml	1 ml	3x 1 ml

* S-Dis polymerase reaction buffer (10x): composition confidential

** KCI reaction buffer (10x): composition confidential

*** recommended MgCl₂-final concentration: 3-4 mM

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Application- & quality control

- The S-Dis polymerase is suitable for the amplification of very long DNA fragments (up to 20-30 kb)
- The enzyme has no endonuclease or nickase activity

For quality assurance each batch of S-Dis polymerase undergoes the following tests:

- Strand displacement PCR with a variety of templates (genomic DNA from human and beef, phage lambda DNA)
- Test for exo- and endonuclease contamination
- "no primer"-test with lambda DNA cycling without primer
- "no template "-test with primers complementary to the conserved region of the 16S bacterial ribosomal genes

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Applications

LAMP

The Strand Displacement activity of the polymerase is temperature dependant; with an optimum for LAMP applications between 62-68 °C. Due to the high thermal stability of the enzyme, an initial DNA denaturation step of the LAMP can be performed (92 °C for 2 min), which usually greatly improves the reaction. The LAMP can be performed with 15-50 units S-Dis polymerase per 50µl reaction volume.

PCR

The S-Dis polymerase is suitable for amplification of short (from 100 bp) and very long (up to 20-30 kb) DNA fragments of all kinds. From simple (plasmids) to more complex templates (genomic DNA) no special optimization is required. Compared to a conventional Taq polymerase improved productivity is achieved by the use of the S-Dis polymerase in PCR applications: more yields, higher speed and better efficiency. Even "single copy" templates are amplified with very good results.

Note:

A hot start version of the S-Dis polymerase (antibody blocked) is also available at Bio&SELL

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PCDR: (polymerase chain displacement reaction)

The PCDR provides a much higher efficiency and sensitivity than a conventional PCR, in this case the S-Dis polymerase is the enzyme of choice to optimize the PCDR. Within the PCDR the enzyme combines its two unique advantages: the strand displacement activity and the high thermal stability.

Recommended PCR protocol (normal PCR and PCDR)

• temperature: 92 °C for denaturation, 68 °C for elongation

• amount of S-Dis polymerase: 1.5 to 15 units S-Dis polymerase per 50 µl PCR volume.

Example (PCR or PCDR)

A 50 μ l reaction mixture contains 20 units of S-Dis polymerase, 1x KCl reaction buffer, 3 mM MgCl₂, 0.375 mM dNTPs (each); 20 pmol primers (each) and about 0.05 ng of cDNA library as a template.

PCR/ PCDR protocol: Preheat 92°C for 2min. Denaturation 92°C – 30 sec. Elongation 65°C – 1min 20 cycles

Note:

The thermal cycler should be programmed according to the manufacturer's instructions. Each program should be started with an initial denaturation step at 92 °C for 2 min. The recommended elongation time is 15-40 sec. per 1 kb target DNA. For maximum yield and specificity the temperature (annealing) and time should be re-adjusted for each new template and primer pair.

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Technical Data

Enzyme activities: The S-Dis polymerase has a 5'-3 'polymerase and a 5'-3' strand displacement activity. The enzyme has no exonuclease activity.

Thermo stability: S-Dis polymerase is thermostable up to 93 °C. For denaturation of LAMP and PCR methods, 92 °C is recommended. Please refer to the standard program of this data sheet under "PCDR".

pH optimum: 8.8 – 9.0

temperature optimum: 62 - 70 °C

Concentration: 10 units/µl or 50 units/µl

Unit definition: One unit is the amount of enzyme required to convert 10 nmol dNTP in 30 minutes at 74 °C in an acid-insoluble form.

Shipment: at room temperature

Storage: at -20 °Celsius

Safety warnings and precautions: This product and its components should be handled only by persons trained in laboratory techniques. It is advisable that suitable protective clothing, such as laboratory overalls, safety glasses and gloves, are worn. Care should be taken to avoid contact with skin or eyes. In case of contact wash immediately with water.

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Other products that might interest you:

Bio&SELL DNA Markers and DNA Ladders

The Bio&SELL DNA Markers and DNA Ladders are characterized by sharp bands and excellent resolution in every size range.

50 bp DNA Ladder

Suitable for the size determination of small double-stranded DNA in the range between 50 bp and 700 bp.

100 bp DNA Ladder including loading buffer

Suitable for the size determination of double-stranded DNA in the range between 100 bp and 1,500 bp.

1 kb DNA Ladder including loading buffer

Suitable for sizing double-stranded DNA in the range between 250 bp and 10 kb.

λ-HindIII DNA Ladder

Suitable for sizing double-stranded DNA in the range between 125 bp and 23,130 bp.

100 bp DNA Marker			
bp	Größe (bp)	DNA-Gehalt (ng/µl)	
	1.500	150	
	1.000 (x 2)	200	
1500 900 800 700 600 300 300 200 1000x2	900	120	
	800	110	
	700	70	
	600	80	
	500 (x 2)	150	
	400	50	
	300	30	
	200	20	
	100	20	

Bio&SELL DNA-Markers:

Sharp in every size range!

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For effective research.

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