

SuperSAP™

Shrimp Alkaline Phosphatase



● 5 Minute Dephosphorylation

SuperSAP rapidly removes the terminal 5' phosphate from protruding-, blunt- or recessed-ends in just 5 minutes at 37°C.

● Simultaneously Cut & Dephosphorylate Cloning Vectors

SuperSAP works directly in most restriction enzyme digests and can be added directly to the reaction to simultaneously cut and dephosphorylate DNA. No additional buffers or additives are required.

● Easy to Inactivate

SuperSAP is heat-labile and is easily inactivated at 65°C for 15 minutes.

● Convenient – Direct Ligation

SuperSAP reactions do not require purification, e.g. phenol extraction, ethanol precipitation or spin column, prior to ligation. After SuperSAP treatment, the dephosphorylated cut vector may be directly ligated using the USB Ligate-IT™ Rapid Ligation Kit [PN 78400/10] or T4 DNA Ligase [PN 70005].

SuperSAP™ is an enhanced formulation of Shrimp Alkaline Phosphatase designed for rapid dephosphorylation of DNA prior to its use in cloning applications and end-labeling. SuperSAP dephosphorylates up to 5 pmols of cohesive or blunt ends with a background reduction $\geq 95\%$ in just 5 min. RNA and protein may also dephosphorylated with SuperSAP.

SuperSAP has all the benefits of SAP. It has a high specific activity and is heat-labile. SuperSAP can be easily heat-inactivated at 65°C for 15 min and works well in various restriction enzyme buffers. No additional buffers or additives are required.

Table 1

	Number of Colonies	Background Reduction (%)
5' Overhang EcoR I-cut pUC 19 vector		
Control	583	
1 μ l SuperSAP	5	99%
3' Overhang Pst I-cut pUC 19 vector		
Control	1987	
1 μ l SuperSAP	0	100%
Blunt End Hinc II-cut pUC 19 vector		
Control	490	
1 μ l SuperSAP	2	99.6%

Rapid SuperSAP™ dephosphorylation for 5 min prevents recirculation of vector. pUC19 vector was digested as indicated, purified using a spin column and re-suspended in 10mM Tris-HCl, pH 8.5. 5 μ g was treated with 1 μ l of SuperSAP and incubated for 5 min at 37°C followed by heat-inactivation at 65°C for 15 min. 50 ng was self-ligated directly using the USB Ligate-IT Rapid Ligation Kit (PN 78400), 2.5 ng was transformed into *E. coli* DH5- α and 0.5 ng was plated on selective medium.

Components:

	50 Reaction
	Pack Size
SuperSAP	50 μ l
10X SuperSAP Reaction Buffer	1 ml

SuperSAP is in 50% glycerol and should be stored at -20°C in a non frost-free freezer.



SuperSAP™

Product Code	Pack Size	List Price
75592	50 reactions	\$79.00

USB Corporation

26111 Miles Road; Cleveland, OH 44128
800.321.9322 | www.usbweb.com



Source:*Pandalus borealis* (arctic shrimp)**Purity:**

Tested for contaminating endonucleases, exonucleases and ribonucleases.

Shipping and Storage:

Shipped on dry ice. Store at -20°C.

Tested User Friendly™ Functional Test:**5 Minute Dephosphorylation**

Dephosphorylation of 5 pmol of purified vector DNA termini with 1 µl SuperSAP in 1X Reaction Buffer in 5 minutes at 37°C reduces the background of re-ligation and transformation to >95% compared to untreated control.

Simultaneous Dephosphorylation & Restriction Enzyme Digestion

Simultaneous dephosphorylation and restriction enzyme digest with 1 µl of SuperSAP for 5' overhang and blunt ends and 2 µl for 3' overhang in 30 minutes at 37°C reduces the background of re-ligation and transformation to >95% compared to untreated control.

References:

1. RUAN, C. C., SAMOLS, S. B. AND FULLER, C. W. (1990) *Comments* 17, (No. 1), United States Biochemical Corporation, Cleveland, OH.
2. WERLE, E., SCNEIDER C., RENNER, M., VÖLKER, M. AND FIEHN, W. (1994) *Nucleic Acids Res.* 22, 4354-4355.
3. HANKE, M. AND WINK, M. (1994) *BioTechniques* 17, 858-860.

Related Products:**Shrimp Alkaline Phosphatase (SAP) [70092Y,Z,X]**

500 units	\$67.00
1,000 units	\$115.00
5,000 units	\$395.00

Ligate-IT Rapid Ligation Kit [78400/10]

25 reactions	\$72.00
100 reactions	\$198.00

T4 DNA Ligase**Standard Concentration, 1 unit/µl [70005Y,Z,X]**

100 units	\$37.00
300 units	\$94.00
500 units	\$137.00

High Concentration, ≥ 5 units/µl [70042X]

500 units	\$137.00
-----------------	----------

ExoSAP-IT and Exonuclease I/Shrimp Alkaline Phosphatase Method. This product is licensed under U.S. Patent Numbers: 5,741,676 and 5,756,285, and corresponding patents issued in other countries. Purchase of this product includes a license to use this product in a restricted way within the scope of rights granted to USB by Amersham Biosciences Limited. ExoSAP-IT is covered by U.S. Patent Nos. 6,379,940 and 6,387,634.

All goods and services sold are subject to the terms & conditions of sale from USB Corporation or the company which supplies them. A copy of these terms & conditions are available upon request. Pricing subject to change.

Table 2

	Number of Colonies	Background Reduction (%)
Kpn I-cut pUC 19 vector Buffer L (USB) 3' Overhang		
Control	4796	
2 µl SuperSAP	44	99%
Hind III-cut pUC 19 vector Buffer M (USB) 5' Overhang		
Control	1783	
1 µl SuperSAP	13	99.3%
EcoR I-cut pUC 19 vector Buffer H (USB) 5' Overhang		
Control	3269	
1 µl SuperSAP	84	97.4%
BamH I-cut pUC 19 vector Buffer K (USB) 5' Overhang		
Control	1753	
1 µl SuperSAP	0	100%
Sma I-cut pUC 19 vector Buffer A (USB) Blunt End		
Control	1091	
1 µl SuperSAP	0	100%

Simultaneous dephosphorylation with SuperSAP™ and restriction enzyme digestion is convenient and effective to prevent recirculation of vector. 1 µg of pUC19 was digested as indicated with 1 µl of SuperSAP (5' overhang or blunt), or 2 µl of SuperSAP (3' overhang) in the appropriate restriction enzyme buffer and was incubated for 30 min at 37°C followed by heat-inactivation at 65°C for 15 min. 50 ng was directly self-ligated using the USB Ligate-IT Rapid Ligation Kit (PN 78400), 2.5 ng was transformed into *E. coli* DH5-α and 0.5 ng was plated on selective medium.



©2006 USB Corporation. All rights reserved. USB, logo design and ExoSAP-IT are registered trademarks of USB Corporation. SuperSAP, Ligate-IT and the phrase 'Fueling Innovation' are trademarks of USB Corporation. The Polymerase Chain Reaction (PCR) is covered by patents owned by Roche Molecular Systems and F Hoffman-La Roche Ltd.

800.321.9322 | www.usbweb.com