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Not for use in diagnostic procedures.



SuRE/Cut Buffers

 **Version: 23**

Content Version: January 2020

Cat. No. 11 417 959 001	SuRE/Cut Buffer A 5 x 1 ml
Cat. No. 11 417 983 001	SuRE/Cut Buffer M 5 x 1 ml
Cat. No. 11 417 991 001	SuRE/Cut Buffer H 5 x 1 ml

Store product at –15 to –25°C.

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1. General Information

1.1. Contents

Vial / Bottle	Cap	Label	Function / Description	Catalog Number	Content
A	purple	SuRE/Cut Buffer A for Restriction Enzymes, 10x conc.	Contains 330 mM Tris acetate, 660 mM potassium acetate, 100 mM magnesium acetate, 5 mM dithiothreitol, pH 7.9 (+37°C).	11 417 959 001	5 vials, 1 ml each
H	red	SuRE/Cut Buffer H for Restriction Enzymes, 10x conc.	Contains 500 mM Tris-HCl, 1 M NaCl, 100 mM MgCl ₂ , 10 mM dithioerythritol, pH 7.5 (at +37°C).	11 417 991 001	5 vials, 1 ml each
M	green	SuRE/Cut Buffer M for Restriction Enzymes, 10x conc.	Contains 100 mM Tris-HCl, 500 mM NaCl, 100 mM MgCl ₂ , 10 mM dithioerythritol, pH 7.5 (at +37°C).	11 417 983 001	5 vials, 1 ml each

1.2. Storage and Stability

Storage Conditions (Product)

When stored at –15 to –25°C, the product is stable through the expiration date printed on the label.

Vial / Bottle	Cap	Label	Storage
A	purple	SuRE/Cut Buffer A, 10x conc.	Store at –15 to –25°C.
H	red	SuRE/Cut Buffer H, 10x conc.	Store at –15 to –25°C.
M	green	SuRE/Cut Buffer M, 10x conc.	Store at –15 to –25°C.

1.3. Application

The 10x concentrated SuRE/Cut Buffers are optimized for DNA restriction digest. Activity of all restriction enzymes has been determined in each buffer to select 100% activity or to calculate activity in double-digests.

2. How to Use this Product

2.1. Parameters

Buffers

Composition of Buffers A, H, and M

Buffer components	Final concentration in mM (1:10 dilution)		
	A	H	M
Tris acetate	33	–	–
Tris-HCl	–	50	10
Magnesium acetate	10	–	–
MgCl ₂	–	10	10
Potassium acetate	66	–	–
NaCl	–	100	50
Dithioerythritol (DTE)	–	1	1
Dithiothreitol (DTT)	0.5	–	–
2-mercaptoethanol	–	–	–
pH at +37°C	7.9	7.5	7.5

Quick buffer reference

The following table shows the correct buffer to use with each restriction enzyme. Enzymes available in high and low concentrations are indicated in bold.

i *Mae III* requires a special incubation buffer for optimal activity and is supplied as a 2x-concentrated buffer.

Buffer	Enzymes
A	Apa I , Dpn I, Sma I
M	Sfi I
H	Bln I (Avr II), Nde I, Not I , Pvu I, Spe I , Swa I, Xba I

Activity in SuRE/Cut Buffer System

This following table states the percentage activity of each restriction enzymes in each of the 3 SuRE/Cut Buffers. The preferred buffer for each enzyme is printed in bold. Correct usage of this buffer system will prevent nonspecific side effects, such as star activity, that can occur under suboptimal reaction conditions. Each restriction enzyme is supplied with a complementary vial of its own function-tested SuRE/Cut Buffer, 10x concentrated.

i *Mae III requires a special incubation buffer for optimal activity and is supplied as a 2x-concentrated buffer.*

Enzyme	A	H	M
Apa I	100%	0 – 10%	50 – 75%
Bln I (Avr II)	25 – 50%	100%	25 – 50%
Dpn I	100%	75 – 100%	75 – 100%
Mae III	0 – 10%	10 – 25%	0 – 10%
Nde I	25 – 50%	100%	50 – 75%
Not I	10 – 25%	100%	25 – 50%
Pvu I	50 – 75%	100%	50 – 75%
Sfi I	25 – 50%	25 – 50%	100%
Sma I	100%	0 – 10%	0 – 10%
Spe I	75 – 100%	100%	100%
Swa I	0 – 10%	100%	0 – 10%
Xba I	100%	100%	75 – 100%

Temperature Optimum

Special incubation temperatures

Most restriction enzymes are incubated at +37°C.

i *The following restriction enzymes have special incubation temperatures.*

Enzyme	Incubation Temperature [°C]	Enzyme	Incubation Temperature [°C]	Enzyme	Incubation Temperature [°C]
Acs I	+50	Bsm I	+65	Mae III	+55
Acy I	+50	Bsp LU 11	+48	Sfi I	+50
Apa I	+30	Bss HII	+50	Sma I	+25
Bcl I	+50	Bst EII	+60	Swa I	+25
Bse AI	+55	Bst XI	+45	Taq I	+65
Bsi WI	+55	Mae I	+45	Tru 9I	+65
Bsi YI	+55	Mae II	+50	-	-

3. Additional Information on this Product

3.1. Test Principle

Commonly used bacterial strains

Strain	Genotype
BL21	<i>E. coli</i> B F ⁻ <i>dcm ompT hsdS</i> (<i>r_B</i> ⁻ <i>m_B</i> ⁻) <i>gal</i> (Studier, FW, et al, 1986).
C600 ^e	<i>supE44 hsd R2 thi-1 thr-1 leuB6 lacY1 tonA21</i> (Hanahan, D, 1983).
DH5α	<i>supE44 Δ(lacU169 (Φ80dlacZΔM15) hsdR17 recA1 endA1 gyrA96 thi-1 relA1</i> (Hanahan, D, 1983).
HB101	<i>supE44 hsdS20 recA13 ara-14 proA2 lacY1 galk2 rpsL20 xyl-5 mtl-1</i> (Hanahan, D, 1983).
JM108	<i>recA1 supE44 endA1 hsdR17 gyrA96 relA1 thi Δ(lac-proAB)</i> (Yanisch-Perron, C, et al, 1985).
JM109	<i>recA1 supE44 endA1 hsdR17 gyrA96 relA1 thi Δ(lac-proAB) F'[traD36proAB⁺, lacI^q lacZΔM15]</i> (Yanisch-Perron, C, et al, 1985).
JM110	<i>rpsL (Str^r) thr leu thi-I lacY galk galT ara tonA tsx dam dcm supE44 Δ(lac-proAB) F'[traD36proAB⁺, lacI^q lacZΔM15]</i> (Yanisch-Perron, C, et al, 1985).
K802	<i>supE hsdR gal metB</i> (Raleigh, E, et al, 1986; Wood, WB, 1966).
SURE ^r	<i>recB recJ sbc C201 uvrC umuC::Tn5(kan^r) lac, Δ(hsdRMS) endA1 gyrA96 thi relA1 supE44 F'[proAB⁺ lacI^q lacZΔM15 Tn10 (tet^r)</i> (Greener, A, 1990).
TG1	<i>supE hsd Δ5 thi Δ(lac-proAB) F'[traD36proAB⁺, lacI^q lacZΔM15]</i> (Gibson, TJ, 1984).
XL1-Blue ^r	<i>supE44 hsdR17 recA1 endA1 gyrA46 thi relA1 lac F'[proAB⁺, lacI^q lacZΔM15 Tn10 (tet^r)</i> (Bullock, et al, 1987).

4. Supplementary Information


4.1. Conventions




To make information consistent and easier to read, the following text conventions and symbols are used in this document to highlight important information:

Text convention and symbols

 *Information Note: Additional information about the current topic or procedure.*

 **Important Note: Information critical to the success of the current procedure or use of the product.**

   etc. Stages in a process that usually occur in the order listed.

   etc. Steps in a procedure that must be performed in the order listed.

* (Asterisk) The Asterisk denotes a product available from Roche Diagnostics.

4.2. Changes to previous version

Layout changes.

Editorial changes.

4. Supplementary Information

4.3. Trademarks

All product names and trademarks are the property of their respective owners.

4.4. License Disclaimer

For patent license limitations for individual products please refer to:

List of biochemical reagent products.

4.5. Regulatory Disclaimer

For life science research only. Not for use in diagnostic procedures.

4.6. Safety Data Sheet

Please follow the instructions in the Safety Data Sheet (SDS).

4.7. Contact and Support

To ask questions, solve problems, suggest enhancements or report new applications, please visit our **Online Technical Support Site.**

To call, write, fax, or email us, visit **sigma-aldrich.com**, and select your home country. Country-specific contact information will be displayed.

