NEB Restriction Enzymes:

Compare and see the difference

- Highest buffer compatibility
- Significantly reduced star activity
- Save your budget

BIOKÉ

NEW ENGLAND BioLabs Inc.

New England Biolabs provides 270+ restriction enzymes and offers the highest buffer compatibility. Over 80% of the NEB restriction enzymes is recombinant in contrary to other suppliers where the percentage of recombinant enzymes is significantly lower. This results in a dramatically lower star activity.

NEB Restriction Enzymes: Save your budget!

Highest buffer compatibility and most reliable performance

Highest Buffer Compatibility

New England Biolabs provides over 170 restriction enzymes that exhibit 100% activity in NEBuffer 4 . That is more than just "added convenience".

In addition to reduced star activity, HF™ restriction enzymes work optimally in NEBuffer 4, which has the highest level of enzyme compatibility and will simplify double digest reactions.

Of the top 20 most commonly used restriction enzymes, NEB provides 18 enzymes with NEBuffer 4, the other 2 are provided with NEBuffer 3. This unrivaled buffer compatibility results in convenience in reaction set-up and great savings to your budget.

Supplier	Buffers supplied with the Top 20 enzymes
NEB	2
Thermo Scientific Fermentas	8 *
Life Technologies	5
Promega	6
Roche	6

*Applies to conventional restriction enzymes only

Example: Double digest EcoRV/KpnI

New England Biolabs

As you can see in the example below, EcoRV-HF/KpnI-HF both exhibit 100% activities in NEBuffer 4, i.e. each enzyme works at regular 1-fold concentration to obtain 100% cleavage.

Enzyme	Cat#	Temp	Supplied Buffer	% Activity in NEBuffer 1	2	3	4
EcoRV-HF™	R3195	37°C	NEBuffer 4	25	100	100	100
KpnI-HF™	R3142	37°C	NEBuffer 4	100	25	0	100

*Double digest recommendations for EcoRV-HF™ and KpnI-HF™: Digest in NEBuffer 4 at 37°C.

Thermo Scientific Fermentas

Double digest recommendation: The first digestion should be performed in 1X Tango™ buffer (low salt concentration buffer) with 4-fold excess of KpnI. Incubate at 37°C for 1 hour. When the first digestion is complete, add 10X concentrated Tango™ buffer (amount "V") to a final 2X concentration (high salt concentration buffer) and Eco32I (EcoRV).

Many conventional restriction enzymes from Thermo Scientific Fermentas require more units to cleave in double digests! Here: 4-fold excess i.e. 4-times as expensive!

Significantly reduced star activity

As part of our ongoing commitment to the study and improvement of restriction enzymes, NEB has made several advances in restriction enzyme research. This work has resulted in a line of High-Fidelity (HF™) restriction enzymes. One of the benefits of these HF™ enzymes is the reduced star activity.

Star activity is of concern if extra banding can cause misinterpretation of results in genotyping and mutational analysis procedures. The High-Fidelity enzymes have the same specificity as their established counterpart with dramatically reduced star activity. All the HF™ restriction enzymes are Time-Saver qualified, and digest substrate DNA in five minutes.

In order to distinguish these engineered enzymes, the letters -HF™ have been added to the restriction enzyme name. These enzymes are packaged with purple labels to distinguish them from our existing enzymes.

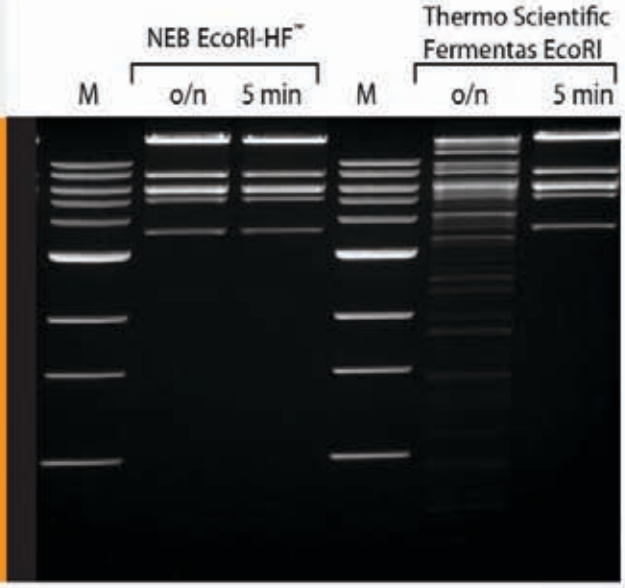
High-Fidelity (HF) Restriction Enzymes:

- Engineered for performance
- Dramatically reduced star activity (up to 500-fold in some cases)
- 100% Activity in a single buffer
- Time-Saver™ qualified for 5-15 minute digests
- Value – Same price as established enzymes

Example: Reduced Star activity EcoRI

As shown in the figure, NEB EcoRI-HF shows significantly reduced star activity in overnight digests, as compared to Thermo Scientific Fermentas EcoRI.

Figure: NEB EcoRI-HF shows no star activity when used in 5 minutes or overnight. 50 µl reactions were set up using 1 µg of Lambda DNA, 1 µl of enzyme (NEB EcoRI-HF and Thermo Scientific Fermentas EcoRI) and recommended reaction buffer. Digests were incubated at 37°C.



Restriction Enzymes from NEB show significantly reduced star activity, as compared to Thermo Scientific Fermentas enzymes

30 min, more than 95% of DNA fragments can be ligated and recut.

Labeled Oligonucleotide (LO) Assay
No detectable degradation of single-stranded or double-stranded oligonucleotides occured during incubation with 1 µl of FastDigest® EcoRI for 1 hour.

Prolonged Incubation / Star Activity Assay
No detectable degradation of 1 µg of lambda DNA due to nuclease contamination or star activity occurred during incubation with 1 µl of FastDigest® EcoRI for 0.5 hour. Longer incubation may result in star activity.

Blue/White Cloning Assay
pUC57 DNA was incubated with 1 µl of FastDigest® EcoRI for 1 hour. After religation and transformation, the background level of white colonies was <1%.

Part of the datasheet of FastDigest® EcoRI from Thermo Scientific Fermentas: incubation longer than 30 minutes results in star activity.

Save your budget

Relative costs of the Top20 most commonly used enzymes

Supplier		Relative cost	Discount*
New England Biolabs		€ 1.256,00	-
Thermo Scientific Fermentas	Convential RE	€ 1.217,00	-
	FastDigest® RE	€ 14.406,00	91%
Roche		€ 3.601,00	65%
Promega		€ 2.021,00	38%

*Average discount from list price needed to match New England Biolabs pricing

Price comparison (€/unit) is based on small pack price list published in February 2012 by the suppliers on their website

Top 20 New England Biolabs restriction enzymes

	Cat#	Enzyme	
1.	R3136	BamHI-HF™	NEB4 ⏱
2.	R0144	BglII	NEB3 ⏱
3.	R0176	DpnI	NEB4 ⏱
4.	R3101	EcoRI-HF™	NEB4 ⏱
5.	R3195	EcoRV-HF™	NEB4 ⏱
6.	R0103	HincII	NEB3 ⏱
7.	R3104	HindIII-HF™	NEB4 ⏱
8.	R3142	KpnI-HF™	NEB4 ⏱
9.	R3193	NcoI-HF™	NEB4 ⏱
10.	R3131	NheI-HF™	NEB4 ⏱

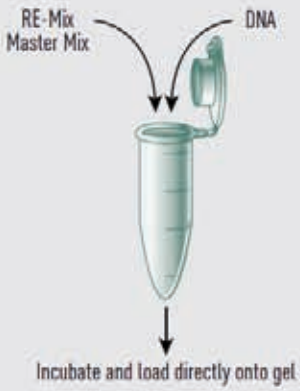
	Cat#	Enzyme	
11.	R3189	NotI-HF™	NEB4 ⏱
12.	R3140	PstI-HF™	NEB4 ⏱
13.	R3150	PvuI-HF™	NEB4 ⏱
14.	R3156	SacI-HF™	NEB4 ⏱
15.	R3138	SalI-HF™	NEB4 ⏱
16.	R0141	SmaI	NEB4 ⏱
17.	R0133	SpeI	NEB4 ⏱
18.	R3182	SphI-HF™	NEB4 ⏱
19.	R0145	XbaI	NEB4 ⏱
20.	R0146	XhoI	NEB4 ⏱

NEB3 = NEBuffer 3 NEB4 = NEBuffer 4 ⏱ = Timersaver (5 min. digest)

For a complete overview of the NEB restriction enzymes, please visit www.bioke.com

NEW

RE-Mix™ Restriction Enzyme Master Mixes



Restriction enzyme digests are now even easier! The same high quality restriction enzymes that you have come to trust from New England Biolabs are now available in master mix format; simply add your DNA and digest.

Visit www.bioke.com for more information

Download the New England Biolabs App

The App "NEB Tools" for the iPhone and Android enables quick and easy access to the most request restriction enzyme information, and allow you to plan your experiments from anywhere.

Plesmanlaan 1d - 2333 BZ Leiden - The Netherlands
T. +31 (0)71 568 10 00 - T. Belgium: 0800 71640 - F. +31 (0)71 568 10 10
info@bioke.com - www.bioke.com

BIOKÉ