Cut Smarter with NEB Restriction Enzymes
A Smarter Look

Keep track of your enzyme data with our new, streamlined protocol cards. These collectible cards contain all the information you need for setting up a restriction enzyme digest, and use less paper than a traditional data card. Full product information can always be found by scanning the QR code on the card, or by visiting the indicated product page at neb.com.

All of NEB’s products, including our restriction enzymes, are manufactured under the strictest of standards, earning ISO registration.

> 200 restriction enzymes are supplied with a single buffer, CutSmart Buffer

276 restriction enzymes are currently sold by NEB

> 250 of NEB’s restriction enzymes are recombinant

238 unique restriction enzyme specificities are available

> 180 restriction enzymes are Time-Saver qualified

26 High-Fidelity (HF) Restriction Enzymes are currently available

For Research Use Only

ISO 9001 Registered
Quality Management
ISO 14001 Registered
Environmental Management
ISO 13485 Registered
Medical Devices

EcoNI

Features: CutSmart, Recombinant, Time-Saver
Reaction Conditions:
CutSmart Buffer, 37˚C. Inactivate at 65˚C for 20 min.
Time-Saver Protocol:
Restriction Enzyme .......................... 1 µl
DNA ........................................... 1 µg
10X NEBuffer ............................... 5 µl (1X)
Total Rxn Volume .......................... 50 µl
Incubation Temperature .................. 37˚C
Incubation Time ........................... 5-15 min.
Can also be used overnight with no star activity.

Buffer Performance:

<table>
<thead>
<tr>
<th>Buffer</th>
<th>NEBuffer</th>
<th>1.1</th>
<th>2.1</th>
<th>3.1</th>
<th>CutSmart</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Activity</td>
<td></td>
<td>50</td>
<td>100</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

For detailed product information, scan the code below or visit www.neb.com/R0521

At a glance, you’ll find icons that detail each enzyme’s pertinent properties, including supplied buffer, reaction temperature, heat inactivation temperature and whether the enzyme is Time-Saver qualified or sensitive to methylation.

Here, you’ll find the recommended protocol for DNA digestion with this enzyme.

The buffer performance chart lists an enzyme’s percent activity in each NEBuffer. The recommended buffer is highlighted.

If the enzyme is supplied with CutSmart Buffer, it will be noted here.

Lot-specific information, including expiration and storage data.

An expanded Cut Site diagram gives you information about the enzyme’s recognition sequence and restriction site.

This unique QR code will bring you directly to detailed information on the enzyme at neb.com.
The Leader in the Discovery and Production of Restriction Enzymes.

After nearly 40 years of offering restriction enzymes to the research community, NEB has earned the reputation of being a leader in enzyme technologies. Working continuously to be worthy of that distinction, NEB strives to develop enzymes of the highest purity and unparalleled performance.

NEB scientists continue to improve its existing portfolio of restriction enzymes, as well as explore their utility in new technologies. As a result, NEB scientists continue to publish scientific papers and to be awarded grants in this area. With the industry’s largest research and development group dedicated to restriction enzymes, we are proud to have been there first: the first to commercialize a recombinant enzyme, the first to introduce a nicking enzyme, and the first to supply a true restriction enzyme master mix. In addition, NEB has an ongoing history of innovation by engineering restriction enzymes with altered specificities and improved performance. Through continued research in these areas, we are committed to driving the innovations that allow us to offer maximum performance and convenience.

129 patents have been awarded to NEB scientists for restriction enzyme-related research

558 type II restriction enzymes have been discovered by NEB scientists

109 restriction enzymes currently sold by NEB were isolated by NEB scientists

280 years of restriction enzyme experience have been accumulated by the Bioinformatics and Research Divisions at NEB

Visit NEBCutSmart.com for restriction enzyme technical tips in the latest videos from NEB scientists.
Simplify reaction setup and double digestion with CutSmart™ Buffer

Over 200 restriction enzymes are 100% active in a single buffer, CutSmart Buffer, making it significantly easier to set up your double digest reactions. Since CutSmart Buffer includes BSA, there are fewer tubes and pipetting steps to worry about. Additionally, many DNA modifying enzymes are 100% active in CutSmart Buffer, eliminating the need for subsequent purification.

For more information, visit [www.NEBCutSmart.com](http://www.NEBCutSmart.com)

Speed up digestions with Time-Saver™ Qualified Restriction Enzymes

Over 180 of our restriction enzymes are able to digest DNA in 5-15 minutes, and can safely be used overnight with no loss of sample. For added convenience and flexibility, most of these are supplied with our new CutSmart Buffer.

For more information, visit [www.neb.com/timesaver](http://www.neb.com/timesaver)

Keep it simple with our RE-Mix® Restriction Enzyme Master Mixes

RE-Mix Restriction Enzyme Master Mixes are pre-mixed solutions that contain enzyme, buffer, BSA and loading dye. Just add your DNA and water; it’s that simple! RE-Mix master mixtures are Time-Saver qualified so you can trust your reaction to digest to completion in 15 minutes, or leave it to digest overnight, with no degradation of your final product.

For more information, visit [www.NEBREMix.com](http://www.NEBREMix.com)

Bring flexibility to your workflow

NEB offers the largest selection of restriction enzymes commercially available. With an evergrowing list to choose from, currently at 276 enzymes – including traditional restriction enzymes, nicking endonucleases, homing endonucleases and methylation-sensitive enzymes for epigenetics studies – there is no need to look anywhere else.
Looking to optimize PERFORMANCE in your reaction?

Choose a High-Fidelity (HF™) Restriction Enzyme

As part of our ongoing commitment to the advancement and improvement of enzymes for the cloning and manipulation of DNA, NEB has developed a line of High-Fidelity (HF) restriction enzymes. These engineered enzymes have the same specificity as the native enzyme, with the added benefit of reduced star activity, rapid digestion (5-15 minutes), and 100% activity in CutSmart Buffer. Enjoy the improved performance of NEB’s engineered enzymes at the same price as the native enzymes!

For more information, visit www.neb.com/HF

Benefit from industry-leading quality controls

NEB’s reputation as a leader in enzyme technologies stems from the quality and reliability of our restriction enzymes. All of our restriction enzymes undergo stringent quality control testing, ensuring the highest levels of purity and lot-to-lot consistency.

<table>
<thead>
<tr>
<th>Physical Purity</th>
<th>Enzymes are evaluated by SDS-PAGE and silver-stained gels to ensure the highest levels of purity and the absence of contaminating proteins.</th>
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</thead>
<tbody>
<tr>
<td>DNA Contamination</td>
<td>Enzymes are screened by qPCR to ensure no contaminating genomic DNA is present. The specification for this assay is less than one E. coli genome per sample.</td>
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<tr>
<td>Exonuclease Activity</td>
<td>Using radioactively labelled DNA substrate and/or state-of-the-art capillary electrophoresis-based assays with fluorescently-labelled substrates, NEB is able to detect very low levels of exonuclease activity.</td>
</tr>
<tr>
<td>Endonuclease Activity</td>
<td>To ensure that there are no contaminating enzymes that could cause nicking or non-specific nuclease degradation, reagents are incubated with supercoiled plasmid DNA for 4 hours to demonstrate the absence of endonuclease contamination.</td>
</tr>
<tr>
<td>Non-specific DNase Activity</td>
<td>Enzymes are incubated overnight with Lambda DNA to confirm that there is no additional non-specific nuclease activity present.</td>
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<tr>
<td>Cloning QC (Ligation and Re-cutting)</td>
<td>A DNA template is over-digested by the appropriate restriction enzyme and the percentage of DNA fragments ligated and re-cut are determined by agarose gel electrophoresis.</td>
</tr>
<tr>
<td>Cloning QC (Blue-white Screening)</td>
<td>A DNA plasmid is over-digested by the appropriate restriction enzyme and the linearized plasmid DNA is ligated and transformed into an E. coli strain with greater than 99% correct transformants as determined by a blue-white screen.</td>
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Visit NEBCutSmart.com for information on the smarter choice of restriction enzymes.
Have you tried our restriction enzyme challenge... now with multi-player functionality.

Visit NEBcutitout.com to test your skills with your friends and colleagues.