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Not for use in diagnostic procedures.



DNase I recombinant grade I, from bovine pancreas, expressed in *Pichia pastoris*

 **Version: 08**

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Lyophilized

Cat. No. 04 536 282 001 2 x 10,000 U

Store the product at +2 to +8°C.

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1. General Information

1.1. Contents

Vial / bottle	Label	Function / description	Content
1	DNase I recombinant	DNA-specific endonuclease.	2 vials, 10,000 U each

1.2. Storage and Stability

Storage Conditions (Product)

When stored at +2 to +8°C, the product is stable through the expiry date printed on the label.

Vial / bottle	Label	Storage
1	DNase I recombinant	Store at +2 to +8°C.

Reconstitution

- 1 Reconstitute DNase I, recombinant in water.

i *This is the most common solvent used.*

- 2 Store the solution for 2 days at +2 to +8°C or 1 month in aliquots at –15 to –25°C.

⚠ *Avoid repeated freezing and thawing.*

- 3 For long-term storage, carefully dissolve DNase I in one of the following buffers.

⚠ *Do not vortex the enzyme while dissolving. Make sure the solution contains at least 10 U/μl.*

Buffers	Storage and Stability
20 mM Tris-HCl, 20 mM MgCl ₂ , 5 mM CaCl ₂ , 0.1 mM dithioerythritol (DTE), 0.1 mM EDTA, 50% (v/v) glycerol, pH 8.	Store several weeks at –15 to –25°C. ⚠ <i>The solution will not freeze.</i>
20 mM Tris-HCl, 50 mM NaCl, 1 mM DTE, 100 μg/ml BSA, 50% (v/v) glycerol, pH 7.6.	Store up to 18 months at –15 to –25°C. ⚠ <i>The solution will not freeze.</i>
20 mM Tris-HCl, 1 mM MgCl ₂ , 50% (v/v) glycerol, pH 7.5.	Store up to 18 months at –15 to –25°C. ⚠ <i>The solution will not freeze.</i>
20 mM Tris-HCl, 1 mM MgCl ₂ , pH 7.5.	Freeze in aliquots of approximately 10 μl quickly on dry ice; store up to 18 months at –60°C or below. Thaw only the amount needed for each experiment. ⚠ <i>Do not refreeze; discard any leftover thawed solution.</i>

1.3. Additional Equipment and Reagent required

For preparation of buffers

i See section, **Reconstitution**, for additional information on preparing buffers.

- Tris-HCl*
- MgCl₂
- CaCl₂
- DTE
- EDTA
- BSA
- Glycerol

For assay conditions and typical reaction

- 0.1 M sodium acetate, 5 mM MgSO₄, pH 5
- Calf thymus DNA
- 0.5 M EDTA

1.4. Application

Use DNase I, recombinant to:

- Eliminate DNA during protein isolation procedures.
- Analyze chromatin structure.
- Eliminate DNA during sample preparation.

2. How to Use this Product

2.1. Before you Begin

Safety Information

Laboratory procedures

- Handle all samples as if potentially infectious, using safe laboratory procedures. As the sensitivity and titer of potential pathogens in the sample material varies, the operator must optimize pathogen inactivation by the Lysis / Binding Buffer or take appropriate measures, according to local safety regulations.
- Do not eat, drink or smoke in the laboratory work area.
- Do not pipette by mouth.
- Wear protective disposable gloves, laboratory coats and eye protection, when handling samples and kit reagents.
- Wash hands thoroughly after handling samples and reagents.

Waste handling

- Discard unused reagents and waste in accordance with country, federal, state, and local regulations.
- Safety Data Sheets (SDS) are available online on dialog.roche.com, or upon request from the local Roche office.

2.2. Protocols

Assay conditions

Volume activity is determined in 0.1 M sodium acetate, 5 mM MgSO₄, pH 5.0.

- 1 For the assay mixture, incubate 100 µg Calf thymus DNA with 20 to 50 U DNase I, recombinant at +25°C.

- 2 Measure the increase in absorbance at 260 nm.

i These conditions are used for the determination of activity and give optimal reproducibility and sensitivity. However when using this enzyme for normal experimental purposes, use incubation buffers that are appropriate for a given application.

Typical reaction

- 1 For a 100 µl reaction, use the following reaction conditions:

Reagent	Volume
50 mM Tris-HCl, pH 7.5	-
10 mM MgCl ₂ (for single-strand nicks)	-
<i>i</i> Replace with 10 mM MnCl ₂ to create double-strand nicks.	
DNA	2 µg
BSA	50 µg/ml
DNase I, recombinant	1 µl
<i>i</i> Concentration depends on the application.	

- 2 Incubate at +37°C for 1 to 30 minutes, depending on the amount of digestion desired.

- 3 Stop the reaction by adding 5 µl of 0.5 M EDTA.

i For nick translation, perform the DNase I reaction simultaneously with the DNA polymerase I reaction.

2.3. Parameters

Molecular Weight

39 kDa

Specific Activity

>10,000 U/bottle according to Kunitz (+25°C; DNA as substrate).

Unit Definition

One U, according to Kunitz, is the enzyme activity that under assay conditions causes an absorbance increase at 260 nm of 0.001/minute in 1 ml.

Volume Activity

Volume activity is determined in 0.1 M sodium acetate, 5 mM MgSO₄, pH 5.0.

3. Additional Information on this Product

3.1. Test Principle

How this product works

DNase I from bovine pancreas, recombinant in *Pichia pastoris*, is a glycoprotein with a molecular weight of approximately 39 kDa. The recombinant enzyme is produced without using any animal cells or other materials derived from animals.

- ① DNase I is a DNA-specific endonuclease that hydrolyzes double-stranded or single-stranded DNA to a mixture of oligo- and mononucleotides.
 - The enzyme requires divalent cations for maximal activity, and the specificity of the reaction depends on the nature of the cation used.

- ② In the presence of Mg²⁺, DNase I causes single-stranded nicks in dsDNA, while in the presence of Mn²⁺, the enzyme produces double-stranded breaks.

3.2. Quality Control

For lot-specific certificates of analysis, see section, **Contact and Support**.

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.**

① ② ③ etc. Stages in a process that usually occur in the order listed.

① ② ③ 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.

Update to include new safety Information to ensure handling according controlled conditions.

4.3. Ordering Information

Product	Pack Size	Cat. No.
Reagents, kits		
Tris hydrochloride	500 g	10 812 846 001

4. Supplementary Information

4.4. Trademarks

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

4.5. License Disclaimer

For patent license limitations for individual products please refer to:

List of biochemical reagent products.

4.6. Regulatory Disclaimer

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

4.7. Safety Data Sheet

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

4.8. 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.

