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

1,4-Dithiothreitol
DTT

Version: 10
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Cleland's reagent (threo-1,4-dimercapto-2,3-butanediol)

Cat. No. 10 197 777 001	2 g
Cat. No. 10 708 984 001	10 g
Cat. No. 11 583 786 001	25 g

Store the product at +2 to +8°C.

1. General Information

1.1. Contents

Vial / bottle	Label	Function / description	Catalog number	Content
1	1,4-Dithiothreitol (DTT)	Crystalline powder	10 197 777 001	1 bottle, 2 g
			10 708 984 001	1 bottle, 10 g
			11 583 786 001	1 bottle, 25 g

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	1,4-Dithiothreitol (DTT)	Store at +2 to +8°C. ⚠ ***Store in a glass container and keep protected from light and moisture.***

1.3. Additional Equipment and Reagent required

For preparation of working solution

HEPES buffer, pH 7.75 (optional)

1.4. Application

Dithiothreitol (DTT) is a reducing agent that is primarily used to protect free SH-groups from oxidation during the isolation of proteins or other biochemical procedures. It can be used for the:

- Isolation and purification of enzymes and proteins.
- Measurement of activity of enzymes (reactivation of enzymes).
- Determination of disulfide groups in proteins and enzymes.
- Characterization of proteins and enzymes.

2. How to Use this Product

2.1. Before you Begin

Working Solution

Solubility

- DTT gives a clear solution in water (c = 10 mg/ml).
- Solution of DTT in HEPES buffer, pH 7.75 is stable for one week at +2 to +8°C in a tightly sealed container.
  ⚠ ***Keep protected from atmospheric oxygen using argon or nitrogen.***

2.2. Parameters

Chemical Formula

$C_4H_{10}O_2S_2$

Chemical Name

Structure

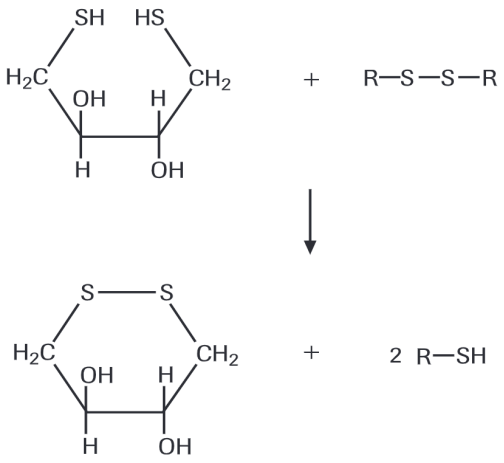

Fig. 1: Chemical structure of Dithiothreitol.

Molecular Weight

154.3 g/mol

Purity

DTT (with Ellman's reagent) >97%.

3. Additional Information on this Product

3.1. Test Principle

Background information

Because of its low redox potential (−0.33 V at pH 7), DTT is able to maintain free SH-groups in the reduced state and to reduce disulfide bridges quantitatively.

- DTT is more suitable for the protection of free SH-groups than 2-mercaptoethanol because it forms an intramolecular disulfide bond on oxidation.
- More stable than 2-mercaptoethanol in aqueous solution.
- Less disagreeable odor.
- Only a slight tendency to oxidize in air.
- Generation of this energetically favorable six-membered ring shifts the reaction equilibrium to the side of the oxidized dithiothreitol. As a result, a much smaller excess is needed to protect SH groups, such as in proteins.

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.
❶ ❷ ❸ 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.

4.3. 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.

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