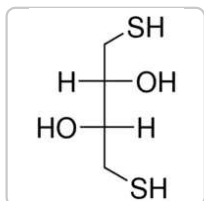


Type in Product Names, Product Numbers, or CAS Numbers to see suggestions.



[All Photos](#) (7)

#### Documents

[↓ SDS](#)

[🔍 COO/COA](#)

[📄 Specification Sheet](#)

[More Documents](#) »

**D0632** ▶ **Sigma-Aldrich.**

## DL-Dithiothreitol

★★★★★ (0)

≥98% (HPLC), ≥99.0% (titration)

#### Synonym(s):

*threo*-1,4-Dimercapto-2,3-butanediol, Cleland's reagent, DTT

#### Linear Formula:

HSCH<sub>2</sub>CH(OH)CH(OH)CH<sub>2</sub>SH

CAS Number: **3483-12-3**

Molecular Weight: 154.25

Beilstein: 1719757

EC Number: **222-468-7**

MDL number: **MFCD00004877**

PubChem Substance ID: **24893251**

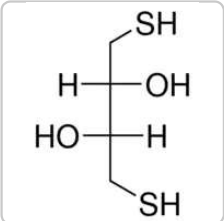
NACRES: NA.21

SKU	Pack Size	Availability		Price	Quantity
D0632-1G	1 G	Estimated to ship on October 10, 2022	<a href="#">Details...</a>	€58.20	<div> <div>–</div> <div>+</div> </div> <div></div>
D0632-5G	5 G	Estimated to ship on October 10, 2022	<a href="#">Details...</a>	€194.00	<div> <div>–</div> <div>+</div> </div> <div></div>
D0632-10G	10 G	Estimated to ship on October 10, 2022	<a href="#">Details...</a>	€370.00	<div> <div>–</div> <div>+</div> </div> <div></div>
D0632-25G	25 G	Estimated to ship on October 10, 2022	<a href="#">Details...</a>	€713.00	<div> <div>–</div> <div>+</div> </div> <div></div>

SKU	Pack Size	Availability		Price	Quantity
D0632-100G	100 G	✓ Only 1 left in stock (more on the way)	<a href="#">Details...</a>	€2,020.00	<div>- +</div> <div>i</div>
D0632-1KG	1 KG	✓ Estimated to ship on November 24, 2022	<a href="#">Inquire</a>		<div>- +</div> <div>i</div>

[Request a Bulk Order](#)[Add to Cart](#)

## RECOMMENDED PRODUCTS

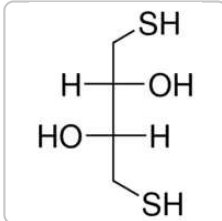


Roche

**DTT-RO**  
**DTT**

crystalline powder, =97% (Ellman's reagent), M<sub>r</sub> 154.3

[View Price and Availability](#)



Sigma-Aldrich

**D9779**  
**DL-Dithiothreitol**

for molecular biology, ≥98% (HPLC), ≥99% (titration)

[View Price and Availability](#)

## PROPERTIES

Quality Level

200

assay	≥98% (HPLC) ≥99.0% (titration)
-------	-----------------------------------

form	powder
------	--------

reaction suitability	reagent type: reductant
----------------------	-------------------------

color	white
-------	-------

mp	41-44 °C (lit.)
----	-----------------

solubility	H <sub>2</sub> O: soluble 50 mg/mL, clear, colorless to very faintly yellow
------------	-----------------------------------------------------------------------------

storage temp.	2-8°C
---------------	-------

SMILES string	<chem>O[C@H](CS)[C@H](O)CS</chem>
---------------	-----------------------------------

InChI	1S/C4H10O2S2/c5-3(1-7)4(6)2-8/h3-8H,1-2H2/t3-,4-/m1/s1
-------	--------------------------------------------------------

InChI key	VHJLVAABSRFDPM-QWWZWVQMSA-N
-----------	-----------------------------

Looking for similar products? Visit [Product Comparison Guide](#)

## Related Categories

[Chelating & Reducing Agents](#)

[Reducing Agents](#)

## DESCRIPTION

### General description

An excellent reagent for maintaining SH groups in reduced state; quantitatively reduces disulfides. DTT is effective in sample buffers for reducing protein disulfide bonds prior to SDS-PAGE. DTT can also be used for reducing the disulfide bridge of the cross-linker N,N'-bis(acryloyl)cystamine to break apart the matrix of a polyacrylamide gel. DTT is less pungent and is less toxic than 2-mercaptoethanol. Typically, a seven fold lower concentration of DTT (100 mM) is needed than is used for 2-mercaptoethanol (5% v/v, 700 mM).

### Application

DTT has been used:

- as one of the reactants in the reduction and alkylation of  $\alpha$ s1-Casein, the major allergen of cow's milk.
- as a component of medium for the demembration and reactivation of spermatozoa.
- to maintain stability of the enzyme as thiol effectively protects the active sites of the biocatalyst.
- as a reducing agent to test the specificity of the reaction of N-Ethylmaleimide with sulfhydryl groups.

An excellent reagent for maintaining SH groups in reduced state; quantitatively reduces disulfides. DTT is effective in sample buffers for reducing protein disulfide bonds prior to SDS-PAGE. DTT can also be used for reducing the disulfide bridge of the cross-linker N,N'-bis(acryloyl)cystamine to break apart the matrix of a polyacrylamide gel. DTT is less pungent and is less toxic than 2-mercaptoethanol. Typically, a seven fold lower concentration of DTT (100 mM) is needed than is used for 2-mercaptoethanol (5% v/v, 700 mM).

### Packaging

1, 5, 10, 25, 100 g in poly bottle

1 kg in poly drum

## RELATED PRODUCTS

### Also Commonly Purchased With This Product

#### I1149

Iodoacetamide, BioUltra

[View Pricing](#)

#### I6125

Iodoacetamide, ≥99% (NMR), crystalline

[View Pricing](#)

#### T1503

Trizma<sup>®</sup> base, Primary Standard and Buffer, ≥99.9% (titration), crystalline

[View Pricing](#)

#### G4251

L-Glutathione reduced, ≥98.0%

[View Pricing](#)

#### D9277

Dialysis tubing cellulose membrane, avg. flat width 10 mm (0.4 in.)

[View Pricing](#)

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## Suggested Gloves For Splash Protection

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### Z677256

Dermatril™ nitrile gloves, size XS

[View Pricing](#)

---

### Z677264

Dermatril™ nitrile gloves, size S

[View Pricing](#)

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### Z677272

Dermatril™ nitrile gloves, size M

[View Pricing](#)

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### Z677280

Dermatril™ nitrile gloves, size L

[View Pricing](#)

---

### Z677299

Dermatril™ nitrile gloves, size XL

[View Pricing](#)

---

**Z677302**

Dermatril™ nitrile gloves, size XXL

[View Pricing](#)

## SAFETY INFORMATION

**Pictograms****GHS05,GHS07****Signal Word**

Danger

**Hazard Statements****H302 - H315 - H318****Precautionary Statements****P264 - P270 - P280 - P301 +  
P312 - P302 + P352 - P305 +  
P351 + P338****Hazard Classifications**Acute Tox. 4 Oral - Eye Dam.  
1 - Skin Irrit. 2**Storage Class Code**

11 - Combustible Solids

**WGK**

WGK 3

**Flash Point(F)**

Not applicable

**Flash Point(C)**

Not applicable

**Personal Protective  
Equipment**dust mask type N95 (US),  
**Eyeshields, Gloves**

## DOCUMENTATION

**Certificate of Analysis**

Enter Lot Number to search for Certificate of Analysis (COA).

Lot Number

e.g. 023J5431

**How to enter Lot Number (COA)****Search****Certificate of Origin**

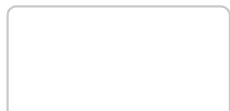
Enter Lot Number to search for Certificate of Origin (COO).

Lot Number

e.g. 023J5431

**How to enter Lot Number (COO)****Search****More Documents**[Spectra - ATR-IR](#)[Structure Search](#)[SDS](#)

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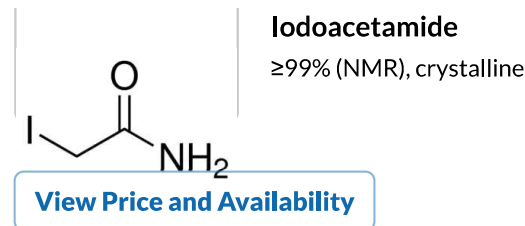
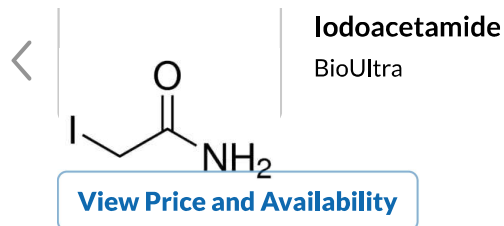
**CUSTOMERS ALSO VIEWED**

Sigma-Aldrich  
**I1149**



Sigma-Aldrich  
**I6125**





## PEER REVIEWED PAPERS

### Effects of ions on the motility of fresh and demembrated paddlefish (*Polyodon spathula*) spermatozoa.

**O Linhart et al.**

*Reproduction (Cambridge, England), 124(5), 713-719 (2002-11-06)*

This study investigated the effects of different environmental conditions on the motility parameters of paddlefish (*Polyodon spathula*) spermatozoa. Paddlefish spermatozoa demonstrated the following characteristics: (i) all spermatozoa were motile 10 s after activation with a velocity of 130-160 microm s<sup>-1</sup>;

### Automated enzymatic determination of sodium in serum.

**R Quiles et al.**

*Clinical chemistry, 39(3), 500-503 (1993-03-01)*

An automated method based on the principles of flow-injection analysis is proposed for the enzymatic determination of sodium ion in serum. The method relies on the activation of beta-galactosidase by the analyte. The features of the proposed method include linear

### Comprehensive characterisation of the heterogeneity of adalimumab via charge variant analysis hyphenated on-line to native high resolution Orbitrap mass spectrometry.

**Florian Füssl et al.**

*mAbs, 11(1), 116-128 (2018-10-09)*

Charge variant analysis is a widely used tool to monitor changes in product quality during the manufacturing process of monoclonal antibodies (mAbs). Although it is a powerful technique for revealing mAb heterogeneity, an unexpected outcome, for example the appearance of

### N-Ethylmaleimide Stimulates and Inhibits Ion Transport in Vestibular Dark Cells of Gerbil.

**Daniel C Marcus et al.***Auditory neuroscience, 1, 101-109 (1994-01-01)*

Vestibular dark cell epithelium was isolated from the semicircular canal of gerbils to test the proposal that the sulfhydryl alkylating agent N-ethylmaleimide (NEM) inhibits K(+) secretion by this tissue and does so by reacting with a site in or near

---

### Evaluation of the allergenicity and antigenicity of bovine-milk alphas1-casein using extensively purified synthetic peptides.

**S Elsayed et al.***Scandinavian journal of immunology, 60(5), 486-493 (2004-11-16)*

Alphas1-Casein (CAS1\_BOVIN), the major allergen of cow's milk (CM), is widely used as hydrolysates in infant diet formulae and additive to other processed food items. To date, most of the reported B-cell epitope mapping were performed on polyethylene pins or

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[View All Related Papers](#)

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## PROTOCOLS AND ARTICLES

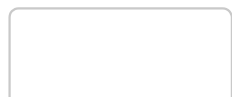
### Articles

#### Middle-Up Analysis of Antibodies by Reversed-Phase Chromatography

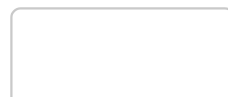
Comparative analysis of different columns in resolving medium-sized fragments of monoclonal antibodies, after digestion using dithiothreitol (DTT) or IdeS (a protease), by Reversed-Phase Chromatography.

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## RECENTLY VIEWED PRODUCTS

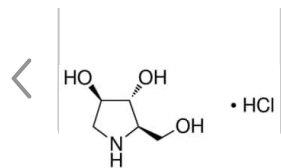


Sigma-Aldrich

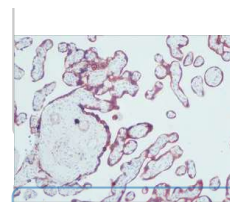
**D1542**

Sigma-Aldrich

**C5992**



**1,4-Dideoxy-1,4-imino-D-arabinitol hydrochloride**  
enzyme inhibitor

[View Price and Availability](#)

**Anti-Cytokeratin, pan antibody, Mouse monoclonal**  
clone PCK-26, purified from hybridoma cell culture

[View Price and Availability](#)

## Reviews

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## Questions

[Be the first to ask a question](#)

## TECHNICAL SERVICE

Our team of scientists has experience in all areas of research including Life Science, Material Science, Chemical Synthesis, Chromatography, Analytical and many others.

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