



Specification

DTT BioChemica**A1101**

Synonym	Cleland's Reagent, 2,3-Dihydroxybutane-1,4-Dithiol, 1,4-Dithio-DL-Threit(ol)
state of matter	Solid
Solubility (20°C)	1500 g/L (H ₂ O)
Melting point	42 - 44°C
Formula	C ₄ H ₁₀ O ₂ S ₂
M	154.25 g/mol
CAS-No.:	3483-12-3
HS-No.:	29309099
EC-No.:	222-468-7
Storage:	2-8°C
LGK:	10 - 13
Disposal:	3
Hazard pictogram(s)	
Hazard statement(s)	H302-H315-H319
Precautionary statement(s)	P302+P350-P305+P351+P338
Signal word	Warning
R:	22-36/38
	harmful, irritant
WGK:	3*

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Attention: Product may form lumps when stored.

Specification

Assay (iodometr.)	min. 99.5 %
pH (0.1 M; H₂O; 20°C)	4.0 - 6.0
Melting point	40 - 44°C
DTT (oxidized)	max. 0.5 %
Water (K.F.)	max. 0.5 %
A (1 cm/0.02 M in H₂O)	
283 nm	max. 0.05

Literature

- (1) Cleland, W.W. (1964) *Biochemistry* **3**, 480-482 Dithiothreitol, a new protective reagent for SH groups.
- (2) Zahler, W.L. & Cleland, W.W. (1968) *J. Biol. Chem.* **243**, 716-719 A specific and sensitive assay for disulfides.
- (3) Jocelyn, P.C. (1987) *Methods Enzymol.* **143**, 246-256 Chemical reduction of disulfides.
- (4) Gegenheimer, P. (1990) *Methods Enzymol.* **182**, 174-193 Preparation of plant extracts.
- (5) Hart, R.A. *et al.* (1994) *Bio/Technology* **12**, 1113-1117 'Large scale *in situ* isolation' of periplasmatic IGF-I from *E. coli*.

Comment

Dithiothreitol (DTT) is, like β -mercaptoethanol, a reducing reagent for proteins and protects the cysteine residues against oxidation. It may substitute for β -mercaptoethanol in almost all experiments at three to four fold lower concentrations. DTT is less toxic, its odor is less intensive and it doesn't form mixed disulfides like β -mercaptoethanol. DTT is water-soluble and stock solutions are prepared at 1 M. Store the solution aliquoted at -20°C and protect from heat during the experiment. Do not choose a too low concentration for the experiment, because it is readily oxidized by air. The working concentration ranges from 0.1 to 1 mM, but the preparation of plant extracts (5 mM; ref. 4) or for the 'large scale *in situ* isolation' of proteins after fermentation (10 mM; ref. 5) require higher concentrations. For the complete reduction of disulfides, the concentration might be significantly higher (3).

A more stable and odorless alternative to DTT is Tris(2-carboxy)ethylphosphine (A2233).