3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Thioredoxin
from *E. coli*, recombinant,
overexpressed in *E. coli*

Product Number **T 0910**
Storage Temperature –20 °C

CAS# 52500-60-4
GenBank Accession Number M26133

Product Description
Thioredoxin from *E. coli* has a molecular weight of approximately 11.7 kDa (SDS-PAGE). The active site of thioredoxin contains two vicinal cysteine residues having the amino acid sequence Cys-Gly-Pro-Cys. In the reduced form two sulfhydryl groups are present and when oxidized they form a disulfide bridge. The thioredoxin system includes thioredoxin, which is reduced by thioredoxin reductase with NADPH that serves as the hydrogen donor.

Thioredoxin is implicated in ribonucleotide reduction,[1] in assimilatory sulfate reduction,[2] and in a regulatory scheme involving oxidation and reduction of protein sulfhydryl groups.[3] It has been shown to be required for filamentous phage assembly in vivo[4] and it catalyzes refolding of various proteins.[5]

The product is supplied as an essentially salt-free, lyophilized powder,

Purity: minimum 90% (SDS-PAGE)

Specific Activity: minimum 3 units/mg protein

Unit definition: One unit will cause a ΔA_{650} of 1.0 in 1 minute at pH 7.5 at 25 °C in the insulin reduction assay. Thioredoxin activity is assessed in an insulin reduction assay, based on the formation of reduced insulin, which precipitates in the presence of a fixed amount of dithiothreitol and suitable amounts of thioredoxin. Precipitation of reduced insulin is monitored by an increase in absorbance at 650 nm.

Precautions and Disclaimer
This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
The product is soluble in water (1 mg/ml), yielding a clear, colorless solution.

Storage/Stability
It is recommended to store the product at –20 °C. Thioredoxin from *E. coli* was found to be stable after 16 hours at 50 °C in both the lyophilized and reconstituted forms. It was also stable after 96 hours at 37 °C.

References
1. Laurent, T.C. et al., J. Biol. Chem., **239**, 3436-3444 (1964).
2. Tsang, M.L.S., and Schiff, J.A., J. Bacteriol., **125,** 923-933 (1976).
3. Buchanan, B.B. et al., Arch. Biochem. Biophys., **314**, 257-260 (1994).
4. Russel, M., and Model, P., J. Biol. Chem., **261**, 14997-15005 (1986).
5. Li, W., and Churchich, J.E., Eur. J. Biochem., **246**, 127-132 (1997).

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