Product Profile

Product Name:	*DEPC-Treated Water*
Product Catalog Number	*01-852-1*
Unit Size Availability:	500ml
Concentration:	1X
Formulation:	Clear, Liquid Solution
Specified Storage Conditions:	Room Temperature(15°-30°C)
Stability: (Under Ideal Handling Storage)	Please Refer To Product Label

Important Note! Please read the ***MSDS*** and ***Product Profile*** carefully in their entirety ***before*** using this material for possible safety precautions and potential hazards.

Product Description:
Diethyl pryrocarbonate (DEPC), a powerful acylating agent, has several functions in Molecular Biology and Biochemistry. An acylating agent is one in which an acyl (RCO-) radical group is introduced into molecules of a compound. DEPC is known to modify histidyl residues in proteins and leads to the inactivation of many enzymes. In the field of Molecular Biology, it is a powerful but not absolute inhibitor of RNase activity (i.e. ribonuclease inhibitor). DEPC not only inhibits ryanodine binding to ryanodine/Ca^{2+} receptor channel in skeletal muscle in a dose-time dependent manner but increases the Ca^{2+} permeability of Sarcoplamic Reticulum (SR) vesicles. DEPC is also useful for specific inactivation of nucleases during isolation of undegraded polynucleotides as well as inhibiting the platelet-activating factor (PAF), acetyl hydrolase. It has also been used as a probe for the topography of 5.8S rRNA yeast ribosomes. DEPC-Treated Water is suitable for use with RNA. It is prepared by incubating 0.1% DEPC and is then autoclaved to remove the DEPC. Although autoclaving does inactivate DEPC by causing hydrolysis of DEPC, EtOH (ethanol) and CO_2 are, however, released as reaction by-products. DEPC has a half-life in H_2O of about 30 minutes and at a concentration of 0.1%, autoclaved solutions for 15 minutes per liter may be assumed to be, under most circumstances, DEPC-Free. DEPC may be used as an added precaution when autoclaving may not be sufficient to eliminate sufficient RNase for some applications. Although at times, even after sufficient autoclaving, a slight EtOH or fruity smell may linger which is caused by the EtOH by-product segueing with the trace carboxylic acid contaminates resulting in the formation of volatile esters. This however does ***not*** mean that traces of DEPC remain in the solution.

DEPC, Tris and Hepes
Tris, is an appellation for the organic compound known as tris(hydroxylmethyl) aminoethane and is one of the most commonly used buffers in biological research(e.g. Molecular Biology and Biochemistry),especially utilized in buffer solutions(e.g. TAE/TBE) for nucleic acids. One of the most important applications is the use as an electrophoresis buffer for polyacrylamide and agarose gel electrophoresis (AGE). DEPC acylates histidyl and tyrosyl –residues and should ***not be*** used in combinations with reagents containing such residues such as found in Tris. Hepes, another commonly used buffer on the one hand, and Tris which contains an amino group with absorbs DEPC and makes it unavailable to inactivate RNase on the other, both appear to act in a similar manner by interfering with the inactivation of RNase when the DEPC concentration is the typical 0.1% found in many protocols. Moreover, a 1% DEPC concentration will overcome this inconvenience. As a general rule, it should be remembered that the amount of DEPC required to inactivate RNase, increases exponentially, as the amount of contaminating RNase in a solution increases. Although increasing concentrations of DEPC inactivate increasing amounts of RNase contamination, it has also been suggested that high levels of residual DEPC or by-products thereof in a solution can and will inhibit some enzymatic reactions or chemically alter RNA (e.g. ***in vitro*** translation reactions). So consequently, increasing amounts of DEPC will increasingly inhibit transcription.

Glassware
All glassware including non-disposable plastic ware used for electrophoresis must be kept separately from other laboratory equipment. Glassware may be soaked and rinsed in a solution of 0.1% DEPC and then autoclaved. DEPC-Treated water may become contaminated after autoclaving. Always aliquot and handle aseptically. Proper safety precautions should be taken when using DEPC due to the fact that it is a powerful acylating agent. It should always be used in a fume hood and ***never*** added to aqueous solutions containing ammonia. This would be a recipe for disaster as it would result in the formation of ethyl carbamate, a potent carcinogen. DEPC-Treated Water only inactivates RNases that are present in the water when it is made, but won't inactivate RNases that are introduced after it has been autoclaved.

Predominant Characteristics of DEPC-Treated Water includes:
- Clear, Liquid Solution
- DNase & RNase-Free
- Commonly Used In Molecular Biology and Biochemistry Applications
- Free of Impurities
- Relatively Long-Storage When Handled and Stored Properly Under Defined Conditions

Storage & Stability:

This product should be stored under specified conditions @ 15-30°C and used within the expiration date indicated on the product label. *Do not use* after the expiration date as specified on the label. *Deterioration of liquid media* may be recognized by any of the following characteristics, among others including: (a). color change, (b). granulation/ clumping, (c). insolubility, (d). and/or decrease in expected performance parameters. Any material described above should not be used and therefore discarded.

DEPC is relatively stable when handled and stored under specified conditions as stipulated on the label. Do not expose to light for prolonged periods as it is light-sensitive. For prolonged storage, store in the dark.

Instructions/Procedure:

1) Take a bottle of *DEPC-Treated Water* from specified storage conditions at 15-30°C and read the label.
2) Ensure that the cap of the bottle is tight.
3) Gently swirl the solution in the bottle to ensure homogeneity.
4) Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
5) Using aseptic/sterile technique under a laminar-flow culture hood and work according to established protocols.

Quality Control (Each Batch/Lot Will Differ Somewhat as to Final Specifications)

Test	Specifications:
Appearance:	Clear Solution
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
Ultra Pure Water(DNase and RNase-Free)	01-866-1	Room Temperature(15-30°)
Acrylamide/bis-Acrylamide (19:1) (T=40%,C=3.3%)Solution	01-872-1	2-8°C
Acrylamide/bis-Acrylamide (29:1) (T=40%,C=3.3%)Solution	01-874-1	2-8°C
Acrylamide/bis-Acrylamide (37.5) (T=40%, C=2.6%) Solution	01-876-1	2-8°C
SDS Solution	01-890-1	Room Temperature(15-30°)
Dulbecco's Phosphate Buffered Saline(DPBS) without Calcium and Magnesium	02-023-1	Room Temperature(15-30°)
L-Glutamine Solution 29.2mg/ml in Saline	03-020-1	-20°C
L-Alanyl-L-Glutamine Solution(A Dipeptide Substitute)	03-022-1	-20°C
Penicillin-Streptomycin Solution,10,000 units/ml Penicillin G Sodium Salt,10mg/ml Streptomycin	03-031-1	-20°C
Sterile Culture-Grade Water	03-055-1	Room Temperature(15-30°)
Serum-Free Cell Freezing Medium	05-065-1	2-8°C
Insulin, Bovine USB Biochemical Formulation	41-934-1	-20°C
Insulin, Recombinant Human EP,USP	41-975-1	-20°C
Note: For a list of other Antibiotics, Serum, other Reagents and Supplements, please refer to our Product Catalog/Product Guides, Product Profiles and Internet Site.		

References:

1) Strutz,K. and Stellwagen,N.C. "Do DNA Gel Electrophoretic Mobilities Extrapolate..." *Electrophoresis*, 1998; 19: 635-642.
2) Hayes,V.M. *et. al*. "Improvements In Gel Composition and Electrophoretic Conditions..." *Nucleic Acid Res*., 27(20), 1999
3) Sullivan Jr. John B. Krieger, Gary R. Hazardous Materials Toxicology: Clinical Principles of Environmental Health. Williams & Wilkins: Baltimore, Maryland, pps.157, 940-945.
4) Barile, Frank A. Clinical Toxicology: Principles and Mechanisms. CRC Press: Boca Raton, Florida, 2004.
5) Lackie, J. M. The Dictionary of Cell & Molecular Biology, Academic Press: London, 2007
6) O'Neil, Maryadele *et. al*., The Merck Index, 14th Edition, Whitehouse Station, New Jersey,2006
7) Biological Industries (BI) Specifications
8) Current Edition USP/E Ph
9) Martindale The Extra Pharmacopeia, 28th Edition, Royal Pharmaceutical Society: London, England
10) Freshney, R.I. Animal Cell Culture: A Practical Approach, IRL Press, Oxford, p.25.