



## Product Information

### DEOXYRIBONUCLEIC ACID (DNA), SODIUM SALT, FROM SALMON TESTES

(This product was formerly listed as Type III)

Product Number **D1626**

Storage Temperature 2-8°C

CAS #: 9007-49-2

Synonyms: DNA, Salmon Testes DNA, Salmon Sperm DNA

#### Product Description

Deoxyribonucleic acid, DNA, is a long double-helical molecule containing genetic information. DNA is a double-stranded (ds) molecule. Each strand is composed of an ordered combination of four nucleotides, each nucleotide consisting of a purine or pyrimidine base (adenine, guanine, thymine or cytosine) associated with a deoxyribose sugar molecule and a phosphate group.<sup>1</sup>

Sperm cells from salmon testes are a good source for non-mammalian DNA. The species of salmon used is *Oncorhynchus keta*. The isolation process for Sigma's salmon testes DNA is a proprietary modification of the procedure described in *Methods in Enzymology*, vol. III, 696 (1957). The tissue is homogenized in water followed by extraction in saturated sodium chloride, filtration and precipitation.

The %G-C content for DNA from salmon testes is reported to be 41.2%. The  $T_m$  (melting temperature) is reported to be 87.5°C in 0.15 M sodium chloride plus 0.015M sodium citrate.<sup>2</sup> The molecular weight (MW) is not determined by Sigma. However, there is a report of a salmon testes DNA, sodium salt purchased from Sigma (product number not specified) having a MW of  $1.3 \times 10^6$  (approximately 2000 bp).<sup>3</sup>

#### Precautions and Disclaimer

DNA from salmon testes is for laboratory use only, not for drug, household or other uses. Refer to the Material Safety Data Sheet (MSDS).

#### Preparation Instructions

DNA solutions may be prepared by dissolving the thread-like lyophilized material in water or buffer. TE buffer (10 mM Tris, pH 8.0, 1 mM EDTA, may be prepared using Product No. T9285, 100X TE Buffer) is commonly used to prepare DNA solutions.<sup>4</sup> Sigma

tests solubility in water at 2 mg/ml which yields a clear to hazy solution.

#### Storage/Stability

Store lyophilized at 2-8°C. After reconstitution, store at -20°C. The lyophilized material is assigned a shelf life of 5 years.

#### Procedure

##### DNA for use as a substrate for DNase I

The DNase I assay used by Sigma's quality control lab uses either D1626, DNA from salmon testes or D1501, DNA from calf thymus. This enzyme assay is available upon request and may also be found on our web site under enzyme assays.

##### DNA for use in hybridization:

A non relevant source of DNA, such as salmon testes DNA, is often included in hybridization solutions at a concentration of 100 µg/ml to help reduce background. DNA is dissolved and then reduced in size either by sonication or by shearing by passage through a needle.

The DNA may be dissolved in autoclaved or molecular biology grade water (nuclease free), Product No. W4502, at a concentration of 10 mg/ml. The solution will need to be stirred for at least 2-4 hours at room temperature to dissolve the DNA. Physically cutting the DNA into smaller pieces may help decrease the time needed for dissolution. Solutions of concentrated DNA will be very viscous. Shearing the DNA will help to reduce the viscosity by passing the DNA solution rapidly 12 times through a 17-gauge needle or once through a 23-gauge needle.<sup>4,5</sup> If sonication is used, the DNA is sonicated until it has the consistency of milk. Samples of the DNA may be monitored by agarose gel electrophoresis to achieve the desired size.<sup>6</sup> Prior to use in hybridization, the DNA is denatured by boiling for 10 minutes and then stored at -20°C until use.<sup>4</sup>

Sigma offers Product No. D9156, Deoxyribonucleic Acid for Hybridization, from Salmon testes and Prod. No. D7656, Deoxyribonucleic Acid for Hybridization, from salmon testes, phenol-chloroform extracted, ethanol precipitated. Both products are 10 mg/ml aqueous solutions, sonicated and denatured.

Estimation of DNA concentration in solution:

The concentration of a DNA solution may be estimated spectrophotometrically at  $A_{260}$  using a quartz microcuvette. It may be necessary to dilute a portion of the sample to obtain an accurate absorbance measurement. One  $A_{260}$  absorbance unit corresponds to 50  $\mu\text{g}$  ds DNA.<sup>4</sup> Each lot of D1626 will yield at least 15  $A_{260}$  absorbance units /mg solid. DNA concentrations may also be estimated colorimetrically using diphenylamine<sup>7</sup> (Prod No. D3409) or fluorimetrically using the bisbenzimidazole, Hoechst No. 33258 (Product No. B2883).<sup>8</sup>

**References**

1. Lewin, B. Ed., Genes VI, University Press, Oxford, England, 1997, Product No. Z35,016-8

2. Marmur, J. and Doty, P., J. Mol. Biol. 5, 109-118 (1962).
3. Tanaka, K. and Okahata, Y. A DNA-lipid complex in organic media and formulation of an aligned cast film, J. Am. Chem. Soc., 118(44),10679-10683 (1996).
4. Sambrook, J. et al. Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory Press, New York, 1989, Product No. M3143
5. Davis, L.G. et al. Basic Methods in Molecular Biology, Elsevier, New York, 1986, p. 364
6. Sigma data.
7. Thompson, C.T. et al. Quantitation of total DNA per cell in an exponentially growing population using the diphenylamine reaction and flow cytometry, Anal. Biochem. 177, 353-357 (1989)
8. Cesarone, C.F. et al. Improved microfluorometric DNA determination in biological material using 33258 Hoechst, Anal. Biochem. 100, 188-197 (1979).

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