User's Guide
Methods for the Calculation of Oligo Analytical Data

The computer program we use to calculate the MW and the micrograms of DNA is sophisticated. The program takes into account the different molecular weights and extinction coefficients of the four standard bases as well as the fact that the oligo is generally delivered as the ammonium salt.

Following is the method that is used to calculate the analytical data that appears on our new Synthesis Reports and Tube Labels (11-98):

Molecular Weight of an Oligonucleotide

$MW = (F(A)*MW(A)+F(G)*MW(G)+F(C)*MW(C)+F(T)*MW(T)) - 62$
Where: $F(X)$ = Frequency (number of occurrences) of A, C, G, or T

$$MW(A) = 313.2 \qquad MW(G) = 329.2$$
$$MW(C) = 289.2 \qquad MW(T) = 304.2$$

Molecular Weight of Oligo in the Ammonium Salt Form

MW of Ammonium Salt = MW + (N-1 Bases * 16.06)

Extinction Coefficient of Oligo measured at 260 Nanometers

$EC = F(A)*15.3 + F(G)*11.8 + F(C)*7.4 + F(T)*9.3$

Quantitation

Micrograms per OD = MW of Ammonium Salt / EC

Melting Point

$Tm = 67.5 + 34 * (\%GC/100) - (395/F(A)+F(G)+F(C)+F(T))$