

Oligonucleotide Extinction Coefficient Formula

| | ϵ_{260} | | ϵ_{260} |
|-------|------------------|-------|------------------|
| pdA | 15.4 | dCpdG | 9.0 |
| pdC | 7.4 | dCpT | 7.6 |
| pdG | 11.5 | dGpdA | 12.6 |
| pT | 8.7 | dGpdC | 8.8 |
| dApdA | 13.7 | dGpdG | 10.8 |
| dApdC | 10.6 | dGpT | 10.0 |
| dApdG | 12.5 | TpdA | 11.7 |
| dApT | 11.4 | TpdC | 8.1 |
| dCpdA | 10.6 | TpdG | 9.5 |
| dCpdC | 7.3 | TpT | 8.4 |

To calculate the number of OD₂₆₀ units per μ mole of oligonucleotide with the sequence 5' DpEp...KpL, use the following formula with the table above:

$$\epsilon_{260} \text{ DpEpFpGp...KpL} = [2(\epsilon \text{ DpE} + \epsilon \text{ EpF} + \epsilon \text{ FpG} + \dots + \epsilon \text{ KpL}) - \epsilon \text{ E} - \epsilon \text{ F} - \epsilon \text{ G} - \dots - \epsilon \text{ K}]$$

Note that you do not include the 3' and 5' terminal bases in the second part (monomers) of the equation, whereas you use every dimer pair in the first part.

Molecular Weight Calculations

To calculate the molecular weight of an oligonucleotide, use the formula below. (Or, go to our website to download the latest version of our molecular weight calculator as an Excel spreadsheet.)

| | | |
|--|---|--------|
| (# of dA in sequence) | x | 249.24 |
| + (# of dC in sequence) | x | 225.23 |
| + (# of dG in sequence) | x | 265.2 |
| + (# of T in sequence) | x | 240.23 |
| + (# of phosphodiester linkages in sequence) | x | 63.97 |
| + (# of phosphorothioate linkages in sequence) | x | 80.03 |
| + 2 for 3' and 5' terminal hydrogens | | |

= Molecular weight of oligonucleotide