10.1.2.52

Volume of complete unit cell ~~24450~~ A^3

Wt of nucleotide 330

Volume of dry nucleotide 336 A^3 ($d = 1.63$)

Density wet ~ 1.55

in Rayl 31 of Patterson

REP Needs to know no. of chains in lattice pt. for interpretn of Patterson (proto 71B photo A form)

Using this approx. value for wet density,

M. Wt of wet unit cell = $1.55 \times 2.4845 \times 10^4 / 1.66 = 2.285 \times 10^4$

M. Wt per primitive cell = 1.143×10^5

Suppose whole number of water molecules per nucleotide, — 1 in between 6 & 8

the MWt per unit cell is 402, 420, 438, 456 or 474

And no. nucleotides/primitive cell: 284 272 261 251 241 220

% H_2O 21.8% 27.3% 33.0% 38.2% 43.6%

If screw axes are 2 fold, ~~there~~ there are 24, 26 or 28 per primitive cell

If 2 chains = primitive cell are equivalent,

there are 24 or 28 nucleotides in primitive cell

If odd no. pairs per chain (to account for peaks of 13, 14 & not 15)

there are 28 nucleotides per unit cell.

This is also suggested by 71B

Density 1.52

M. Wt wet cell $= 22.4 \times 10^3$

M. Wt primitive cell 11.2×10^3

∴ for 22 nucleotides, wt/unit $= \frac{11.2 \times 10^3}{22} = 509$

Wt water $= 509 - 330 = 179$

~~TOT~~ : 10 molecules/nucleotide

or 54% of dry weight

for density 1.47, MWt wet cell, primitive $11.2 \times \frac{1.47}{1.52} = 10.82 \times 10^3$

wt/unit: $10.82 \times 10^3 / 22 = 492$

Wt water $= 492 - 330 = 162$

$= 49\%$