

The Importance of
Material-Specific Metabolism
for Dating.

Results from Known-age manuscripts reveal an interesting difference between same-age Parchment and Papyrus.

AA-10926 (Mich. Inv. 33; P.J. Sijpesteijn, Bulletin of the American Society of Papyrologists 31 [1994] pp. 121-24) is an early 4th century Parchment and is dated to 307 AD. This test was performed in 1993 so the result should reflect a difference of 1,686 years. The calibrated age range is given as AD 260- AD 435 for one sigma. We see that 307 AD falls well within the one sigma range at about 25% of one sigma. This may be illustrated as:



By contrast, AA-12623 is an early 4th century Papyrus (Mich. Inv. 3311; P. Mich. xv 720) and is dated to 308 AD. This test was performed in 1994, again a difference of 1,686 years. The one sigma age of AD538-AD651 is clearly wrong and so is even the two-sigma age range (95% confidence) given as AD430-AD672.

Since 1994 samples have been measured independently for $\delta^{13}\text{C}$. Prior to this, samples were given assumed $\delta^{13}\text{C}$ values. Both AA-10926 and AA-12623 were assigned a $\delta^{13}\text{C}$ value of -25 per mil. Since this is the same $\delta^{13}\text{C}$ value as wood, this automatically converts the C-14 content of both samples into that of wood. At -25 per mil, AA-10926 sample content is .8130 and represents 1,686 years before the present