

In real, the units for energy, area and time are  $Kcal / mole$ ,  $(Angestrom)^2$  and  $femtosecond$  respectively so heat flux unit in real is:

$$\frac{Kcal / mole}{(Angestrom)^2 \text{ femtosecond}}$$

And for energy we have:

$$\frac{Kcal / mole}{6.02 \times 10^{23}} \rightarrow Kcal \quad \& \quad \frac{Kcal}{4.184} \rightarrow KJ$$

So

$$1 \frac{Kcal}{mole} \times \frac{4.184}{6.02 \times 10^{23}} = 0.695 \times 10^{-23} KJ = 6.95 \times 10^{-21} J$$

Finally, the heat flux become like this:

$$1 \frac{Kcal / mole}{(Angestrom)^2 \text{ femtosecond}} = \frac{6.95 \times 10^{-21} J}{(10^{-10} m)^2 (10^{-15} Sec)} = 6.95 \times 10^{14} \frac{J}{m^2 Sec}$$