

Erratum

The following two paragraphs replace two consecutive paragraphs in the journal issue Vol. 14, No. 4 containing the paper entitled “Fire Setting by Nuclear Explosion” by Stanley B. Martin, beginning near the bottom of p. 292:

One is left, then, to decide when and how to apply these criteria. The relatively long exposure times in pulses that fail to cause flames, resulting in glowing ignitions, consistently satisfy both glow criteria. Therefore, the onset temperature of 450°C is both the necessary and sufficient condition. Brief pulses at high peak fluxes exhibit transient flames because the surface temperature criterion is satisfied before the mean. Thus there are two separate criteria, one for transient and the other for sustained. Longer exposures with less intense peaks initiate and sustain flame because the mean temperature criterion is attained before (or no later than) the necessary high surface temperature. Again, as with glowing ignition, a single condition is both necessary and sufficient – in this case, the high surface temperature for spontaneous flaming.

Then, how does one locate the point of divergence of transient and sustained flames? When one notes, for each datum, the value of the ratio of the two dimensionless groups sought, one is guided to the choice of appropriate response temperatures. This dimensionless ratio, known as the Fourier number, $Fo = kt_p / \rho c L^2$, does not contain temperature as a parameter. Given a thermal diffusivity, $\alpha = k / \rho c$, of about $10^{-3} \text{ cm}^2/\text{s}$ [18] for cellulose, this Fourier number can be evaluated from just the peak time and the thickness of the material. Note, that here, the separately estimated k , ρ , and c values are used in the evaluation, rather than a fixed value of α .