

Answer on Question#45015, Physics, Mechanics | Kinematics | Dynamics

Let us denote given coefficient of absorption as k . Since $\frac{\Delta E}{\Delta t} = -k$, and difference of energies is the difference of kinetic energies $\Delta E = \frac{mv_2^2}{2} - \frac{mv_1^2}{2}$, let us find v_2 : $v_2 = \sqrt{\frac{-2}{m} k \Delta t + v_1^2}$.
Substituting $k = 35 \cdot 10^3 \frac{J}{s}$, $m = 280 \text{ kg}$, $v_1 = 100 \frac{km}{h} = \frac{250}{9} \frac{m}{s}$, $\Delta t = 3 \text{ s}$, obtain $v_2 \approx 4.65 \frac{m}{s}$ or $v_2 \approx 16.74 \frac{km}{h}$.

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