

(19.2) The bomb over Hiroshima contained ^{235}U . How many grams were fissioned to correspond to 15 kt of TNT?

$$N_A := 6.022137 \cdot 10^{23} \cdot \text{mole}^{-1}$$

$$\text{MeV} := 10^6 \cdot 1.6021773 \cdot 10^{-19} \cdot \text{joule}$$

$$E_{\text{TNT}} := 10^9 \cdot \text{cal}$$

$$M_{^{235}\text{U}} := 235 \cdot \text{gm} \cdot \text{mole}^{-1}$$

$$E_{\text{bomb}} := 15 \cdot 10^3 \cdot E_{\text{TNT}}$$

$$E_{\text{fiss}} := 200 \cdot \text{MeV}$$

$$m_{\text{fiss}} := \frac{E_{\text{bomb}}}{E_{\text{fiss}}} \cdot \frac{M_{^{235}\text{U}}}{N_A}$$

$$m_{\text{fiss}} = 0.765 \cdot \text{kg}$$

or

$$m_{\text{fiss}} = 765 \cdot \text{gm}$$