Likewise, the molecular weights of $CaCO_3$ (MW_{CaCO_3}) and CaO (MW_{CaO}) are as follows:

$$MW_{CaCO_3} = A_{Ca} + A_C + 3(A_O)$$

$$= 40.08 \text{ g/mol} + 12.01 \text{ g/mol} + (3)(16.00 \text{ g/mol}) = 100.09 \text{ g/mol}$$

$$MW_{CaO} = A_{Ca} + A_O$$

$$= 40.08 \text{ g/mol} + 16.00 \text{ g/mol} = 56.08 \text{ g/mol}$$

Such that the mass of $CaCO_3$ (m_{CaCO_3}) is equal to

$$m_{CaCO_3} = (8.0 \text{ lb}_m) \left(\frac{MW_{CaCO_3}}{MW_{CaO}} \right)$$

$$= (8.0 \text{ lb}_m) \left(\frac{100.09 \text{ g/mol}}{56.08 \text{ g/mol}} \right) = 14.3 \text{ lb}_m$$