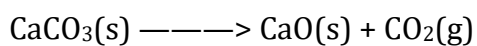


How many grams of  $\text{CaCO}_3$  are needed to produce 1 mole of  $\text{CO}_2$  via the reaction below?



**Solution:**

Coefficients in equation for  $\text{CaCO}_3$  and  $\text{CO}_2$  are equal to 1. Then, each mole of  $\text{CaCO}_3$  produces 1 mole of  $\text{CO}_2$  and amount of moles of  $\text{CaCO}_3$  is equal to amount of moles of  $\text{CO}_2$ . According to this, we need to find a mass of 1 mole of  $\text{CaCO}_3$  to solve this task:

$$m(\text{CaCO}_3) = M(\text{CaCO}_3) \cdot n(\text{CaCO}_3) = (40 + 12 + 16 \cdot 3) \text{ g/mol} \cdot 1 \text{ mol} = 100 \text{ g}$$

(Where  $m$  is mass of  $\text{CaCO}_3$  in grams;  $M$  – molar mass of  $\text{CaCO}_3$  in grams per mole;  $n$  – number of moles of  $\text{CaCO}_3$ ).

**Answer:**

To obtain 1 mole of  $\text{CO}_2$ , we need to use 100 grams of  $\text{CaCO}_3$ .

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