How do you find percentage yeild? For example, reacting 991 mol of SiO(subscript2) with excess carbon yeild 30.0 kg of SiC.

## Solution:

Write the equation for the reaction:

$SiO_2$+3C=SiC+2CO

In chemistry, the reaction yield is the amount of product produced by a chemical reaction. The theoretical yield is the maximum amount of product that can be produced in a perfectly balanced reaction, but the actual yield is usually less than the theoretical yield. To express the efficiency of a reaction, calculate the percent yield using this formula:

$$\%yield = \frac{m(SiC)_{actual}}{m(SiC)_{theoretical}} * 100\%$$

By the reaction equation we find the amount of substance of SiC:

$$\frac{n(SiO_2)}{n(SiC)} = \frac{1}{1}$$

$$n(SiC) = n(SiO_2) * 1 = 991 * 1 = 991\ mole$$

Find the mass of SiC, which can theoretically be formed:

$$m(SiC)_{theoretical} = n(SiC) * M(SiC)$$

$$m(SiC)_{theoretical} = 991 mole * 40.096 \frac{g}{mole} = 39735.3g = 39.7353\ kg$$

Calculate the percent yield of SiC:

$$\%yield = \frac{30.0\ kg}{39.7353 kg} * 100\% = 75.5\%$$

**Answer:** percent yield of SiC 75.5%