“Answer on Question #58244, Chemistry / General Chemistry”

For the following reaction, 5.64 grams of nitrogen gas are mixed with excess oxygen gas . The reaction yields 10.6 grams of nitrogen monoxide .

$N_2 + O_2 \rightarrow 2NO$

$2n(N_2) = n(NO)$

$$n = \frac{m}{M}$$

$$n(N_2) = \frac{5,64}{28} = 0,2\ mol$$

$$n(NO) = 2 \cdot 0,2\ mol = 0,4\ mol$$

$$m = n \cdot M$$

$$m(NO) = 0,4 \cdot 30 = 12\ g.$$

$$\eta = \frac{10,6 \cdot 100}{12} = 88\%$$