Answer to Question #62275, Chemistry / Other

A 0.77 mg sample of boron reacts with oxygen to form 2.48 mg of the oxide.

Answer:
1g = 1000mg
(0.77 mg)/(1000 g/mg) = $7.7*10^{-4}$ grams of B.

$$n(B) = \frac{7.7 \times 10^{-4} g}{10.81 \frac{g}{mol}} = 7.12 \times 10^{-5} mols\ of\ B$$

(2.48 mg)/(1000 g/mg) = $2.48*10^{-3}$ grams of oxide.

$$m(O) = 2.48 \times 10^{-3} g - 0.77 \times 10^{-3} g = 1.71 \times 10^{-3}\ g\ of\ O$$

$$n(O) = \frac{1.71 \times 10^{-3}}{15.99} = 1.07 \times 10^{-4}\ mols\ of\ O$$

$$\frac{B}{O} = \frac{7.12 \times 10^{-5}}{1.07 \times 10^{-4}} = \frac{1}{1.5} = \frac{2}{3}$$

Obtained oxide is **B_2O_3**.