Question #83262, Chemistry / General chemistry

The first reaction in the deployment of an automobile airbag is the decomposition of the solid binary ionic compound, sodium azide, into two products: nitrogen gas and sodium metal. What mass of sodium metal will form from the complete decomposition of 130 grams of sodium azide? Steps: (a) Write a balanced equation
(b) Use a conversion pathway calculation, starting with mass (g) of sodium azide ...◊ #moles sodium azide◊#moles sodium metal product◊mass (g) sodium metal product.

Solution

$2NaN_3 = 2Na + 3N_2$

$M(NaN_3) = 23 + 14*3 = 65$ (g/mol)

$n(NaN_3) = m/M = 130 / 65 = 2$ (mol)

$n(Na) = n(NaN_3) = 2$ mol

$m(Na) = n*M = 23 * 2 = 46$ (g)

Answer

m (Na) = 46 g