

Answer on the question #43562, Chemistry, Physical Chemistry

Question:

What is the empirical formula of a compound that is by mass 50% element A (whose molar mass is 38) and 50% element B (whose molar mass is 19)?

- a) A₂B
- b) AB₂
- c) AB
- d) A₂B₂

Solution:

To find the empirical formula of a compound we have to find the relation of quantities of the elements:

$$\frac{n(A)}{n(B)} = \frac{\omega(A)}{M(A)} : \frac{\omega(B)}{M(B)} = \frac{50}{38} : \frac{50}{19} = 0.5$$

As the relation of the quantities of A and B is 0.5, the formula of compound can be:

AB₂

A₂B₄

A₃B₆

and so on. In the simplest case, the formula of compound is AB₂.

Answer: b) AB₂