A 25.0 mL sample of sodium sulfate was analyzed by adding an excess of barium chloride to produce barium sulfate crystals

Na2SO4(aq) + BaCl2(aq) -> 2NaCl(aq) + BaSO4(s)
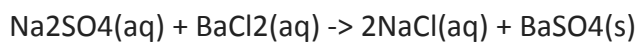
If 5.719g of BaSO4 was obtained what was the molarity of the original Na2SO4?

Solution:

$v = \dfrac{m}{M}$; v - the mole (mol); m – the mass (g); M – the molar mass (g/mol);

M(BaSO4)=233 g/mol; m(BaSO4) = 5.719 g;

v(BaSO4)=0.025 mol;

According to the equation:

v(BaSO4)= v(Na2SO4) = 0.025 mol;

$C = \dfrac{v}{V}$; C – the molarity (mol/L); V – the volume of solution (L);

C(Na2SO4)=1 mol/L;

Answer: 1 mol/L.