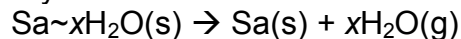


Analysis of Hydrates

Calculations

The analysis/calculations are based on the premise that



where Sa is the salt and x is the number of molecules of H₂O in the hydrate
x is also the mole ratio of water/salt

Steps:

1. Determine molar mass of anhydrous salt from formula
2. Slope = mass ratio anhydrous salt/hydrate
3. Molar mass of hydrate = molar mass anhydrous salt/slope
4. Mass of water in hydrate = molar mass of hydrate - molar mass of anhydrous salt
5. Moles of water in hydrate = mass water in hydrate/18.02 g/mol H₂O = x
6. Formula of hydrate = Formula of anhydrous salt · xH₂O

Example for Cobalt (II) Chloride

1. Molar mass cobalt chloride (anhydrous salt) = 129.8 g
2. Slope = 0.540
3. Molar mass of hydrate = 129.8 g/0.540 = 240.4 g
4. Molar mass of water in hydrate = 240.4 g – 129.8 g = 110.6 g
5. Moles of water in hydrate = 110.6 g/18.02 g/mol = 6.14 moles
6. Formula of hydrate = CoCl₂ · 6H₂O

