Simple Stoichiometry

Dehydration Calculations

Dr. Ron Rusay

Chemical Reactions

- Decomposition (Dehydration)
- A ⟶ B + C
- $BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + H_2O_{(g)}$
- Balanced Equation:
- $BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$

$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$

- How do masses and moles relate? How many moles and grams of barium chloride dihydrate reacted based on the mass of water produced?

Mass Sample (g)	**10.1902**
$BaCl_2 \cdot 2H_2O + NaCl$	
Mass after Heating (g)	9.2886
Mass H_2O (g)	0.9016
?? Mass $BaCl_2 \cdot 2H_2O$	(Calculation)
?? Mass $NaCl$	(Calculation)

$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$

	$BaCl_2 \cdot 2H_2O_{(s)}$		$BaCl_{2(s)}$	$H_2O_{(g)}$
Molar Mass g/mol	244.27		208.23	18.02
Experimental mass (g)				0.9016
moles				0.05003
	$BaCl_2 \cdot 2H_2O_{(s)}$	--->	$BaCl_{2(s)}$	$2\ H_2O_{(g)}$
Calculated moles from water	??		??	
Calculated mass (g)	??		??	

$$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$$

	$BaCl_2 \cdot 2H_2O_{(s)}$		$BaCl_{2(s)}$	$H_2O_{(g)}$
Molar Mass g/mol	244.27		208.23	18.02
Experimental mass (g)				0.9016
moles				0.05003
	$BaCl_2 \cdot 2H_2O_{(s)}$	--->	$BaCl_{2(s)}$	$2\ H_2O_{(g)}$
Calculated moles from water	0.02502		0.02502	
Calculated mass (g)	??		??	

$$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$$

	$BaCl_2 \cdot 2H_2O_{(s)}$		$BaCl_{2(s)}$	$H_2O_{(g)}$
Molar Mass g/mol	244.27		208.23	18.02
Experimental mass (g)				0.9016
moles				0.05003
	$BaCl_2 \cdot 2H_2O_{(s)}$	--->	$BaCl_{2(s)}$	$2\ H_2O_{(g)}$
Calculated moles from water	0.02502		0.02502	
Calculated mass (g)	6.1116		5.2099	

$$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$$

Mass Sample (g)	**10.1902**
$BaCl_2 \cdot 2H_2O + NaCl$	
Mass after Heating (g)	9.2886
Mass H_2O (g)	0.9016
Mass $BaCl_2 \cdot 2H_2O$ (g)	6.1116
?? Mass $NaCl$ (g)	(Calculation)

$$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$$

Mass Sample (g)	**10.1902**
$BaCl_2 \cdot 2H_2O + NaCl$	
Mass after Heating (g)	9.2886
Mass H_2O (g)	0.9016
Mass $BaCl_2 \cdot 2H_2O$ (g)	6.1116
Mass $NaCl$ (g)	4.0786

$$BaCl_2 \cdot 2H_2O_{(s)} \longrightarrow BaCl_{2(s)} + 2\ H_2O_{(g)}$$

Mass Sample (g)	**10.1902**
Mass H_2O (g)	0.9016
Mass *NaCl* (g)	4.0786
% H_2O	8.848
% *NaCl*	40.024