

Simple Stoichiometry

Dehydration Calculations

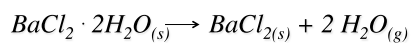
Dr. Ron Rusay



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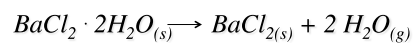
Chemical Reactions

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



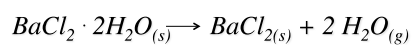
8 How do masses and moles relate? How many moles and grams of barium chloride dihydrate reacted based on the mass of water produced?

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)

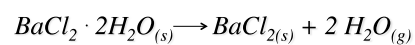


	$BaCl_2 \cdot 2H_2O_{(s)}$	$BaCl_{2(s)}$	$H_2O_{(g)}$
Molar Mass g/mol	244.27	208.23	18.02
Experimental mass (g)			0.9016
Experimental moles			0.05003
	$BaCl_2 \cdot 2H_2O_{(s)}$	\rightarrow	$BaCl_{2(s)}$ $2 H_2O_{(g)}$
Calculated moles from water	??	??	
Calculated mass (g)	??	??	

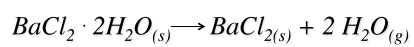




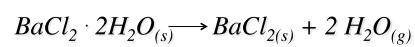
	$\text{BaCl}_2 \cdot 2\text{H}_2\text{O}_{(s)}$	$\text{BaCl}_{2(s)}$	$\text{H}_2\text{O}_{(g)}$
Molar Mass g/mol	244.27	208.23	18.02
Experimental mass (g)			0.9016
Experimental moles			0.05003
	$\text{BaCl}_2 \cdot 2\text{H}_2\text{O}_{(s)}$	--->	$\text{BaCl}_{2(s)}$ $2 \text{H}_2\text{O}_{(g)}$
Calculated moles from water	0.02502		0.02502
Calculated mass (g)	??	??	



	$\text{BaCl}_2 \cdot 2\text{H}_2\text{O}_{(s)}$	$\text{BaCl}_{2(s)}$	$\text{H}_2\text{O}_{(g)}$
Molar Mass g/mol	244.27	208.23	18.02
Experimental mass (g)			0.9016
Experimental moles			0.05003
	$\text{BaCl}_2 \cdot 2\text{H}_2\text{O}_{(s)}$	--->	$\text{BaCl}_{2(s)}$ $2 \text{H}_2\text{O}_{(g)}$
Calculated moles from water	0.02502		0.02502
Calculated mass (g)	6.1116	5.2099	

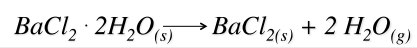


Mass Sample (g)	10.1902
$\text{BaCl}_2 \cdot 2\text{H}_2\text{O} + \text{NaCl}$	
Mass after Heating (g)	9.2886
Mass H_2O (g)	0.9016
Mass $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ (g)	6.1116
?? Mass NaCl (g)	(Calculation)



Mass Sample (g)	10.1902
$\text{BaCl}_2 \cdot 2\text{H}_2\text{O} + \text{NaCl}$	
Mass after Heating (g)	9.2886
Mass H_2O (g)	0.9016
Mass $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ (g)	6.1116
Mass NaCl (g)	4.0786





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

