

# Hydrates

What is a hydrate? (Cite a reference for your answer)

## PROCEDURE

You will be given a sample of an unknown hydrate of the general formula: salt • n(H<sub>2</sub>O). Your task is to determine the value of **n**, this means your task is to determine the number of waters of hydration in the compound. You will determine the mass of half of your sample, place this portion in a small beaker and microwave it, reweigh, and continue this process until two consecutive weighings agree within 0.05g. You will then repeat this procedure on the remaining half of your sample.

You will next calculate the % by mass of water in the sample. At this point the instructor will provide you with the molar mass of the anhydrous salt. You will use this additional information to determine the value of **n**. Once you have determined the value of **n** the instructor will provide you with the formula of the anhydrous salt so that you can determine the formula of the hydrate and the name of the hydrate.

## Data Sheet

	Trial One	Trial Two	
Unknown number	_____		
mass of sample	_____	_____	(g)
mass of sample after microwave: 1 <sup>st</sup> time	_____	_____	(g)
mass of sample after microwave: 2 <sup>nd</sup> time	_____	_____	(g)
mass of sample after microwave: 3 <sup>rd</sup> time	_____	_____	(g)
total mass lost during microwave treatment	_____	_____	(g)
percentage of H <sub>2</sub> O in the original sample	_____	_____	%
molar mass of anhydrous salt	_____	_____	
moles of water	_____	_____	
moles of salt	_____	_____	
<b>n</b>	_____	_____	
formula of hydrate	_____	_____	
name of hydrate	_____		

Please be sure to show sample calculations in your laboratory notebook! It is also important to describe the hydrate carefully before and after subjecting it to microwave radiation.

Once you know the identity of your hydrate, research it on the Internet. Write about the hydrate; its properties, its uses; its behavior.

Why does subjecting the sample to microwaves remove the water in the sample?