Preparation of a 1000 ppm Barium Standard Solution

1) Calculate the Molecular Weight of **$BaCl_2 \cdot 2H_2O$**:

Atomic Weight of	**Ba**	137.34	1 part **Ba**	**137.34**
Atomic Weight of	**Cl**	35.45	2 part **Cl**	70.90
Molecular Weight of	**H_2O**	18.02	2 part **H_2O**	36.04
Molecular Weight of	**$BaCl_2 \cdot 2H_2O$**			**244.28**

That means 244.28 g of **$BaCl_2 \cdot 2H_2O$** contain 137.34 g of **Ba**

2) A 1000 ppm Barium Standard solution contains 1 g Barium per Litre,
or 0.1 g Barium in 100 mL

3) From 1) we calculate the Ratio of Atomic Weight of **Ba** to Molecular Weight of **$BaCl_2 \cdot 2H_2O$**:

$$\frac{\text{Molecular Weight of } BaCl_2 \cdot 2H_2O}{\text{Atomic Weight of Ba}} = \frac{244.28}{137.34} = 1.779$$

That means 1 g of **Ba** is in 1.779 g of **$BaCl_2 \cdot 2H_2O$**

4) From 3) we calculate 0.1 g **Ba** is in 0.1779 g of **$BaCl_2 \cdot 2H_2O$**.
Use a 100 mL Volumetric flask and dissolve 0.178 g of **$BaCl_2 \cdot 2H_2O$** in 90 mL of distilled water. Then fill up with distilled water to the 100 mL mark.
Now you have a 1000 ppm Barium Standard Solution.
Keep this Standard Solution in a tightly closed plastic bottle.
You can use a 1000 ppm Standard Solution for the next 6 months.
Diluted Standard Solutions should be used only for 1 day.