**REPORT**

**TEMPLATE**

**Procedure**

The teacher gave recipe B to base the experiment on. Shortly after, a 50 mL beaker was weighed to 30.288 grams (g). Next, measuring 1 g NiCl2⋅6 H2O. Then, the mass of the beaker was subtracted by the mass of the beaker and the contents. The mass was 1.005 g. Afterwards, the NiCl2⋅6 H2O was dissolved in 5 mL of deionized water. With a 10 mL graduated cylinder, the 25% solution of the ethylenediamine, or H2NCH2CH2NH2 solution was measured to be 4.5 mL. Then, the solution was slowly poured into the beaker with the aqueous NiCl2⋅6 H2O solution and stirred. After that, approximately 25 mL of acetone was added to the solution while stirring and the solid product of [Ni(H2NCH2CH2NH2)3]Cl2 started to form. Before long, the beaker was put in an ice bath for ten minutes. While the solution was in the ice bath, a piece of filter paper was weighed 1.322 g and folded into a cone supported by a funnel and a 250 mL Erlenmeyer flask. The paper was wet with deionized water to stick to the funnel. The limiting reactant was determined by converting the mass given of the reactants dividing it by the molar mass to get the moles. The smaller one, or the limiting reactant was determined to be NiCl2⋅6 H2O. After the ice bath completed, the beaker with the product was poured into the filter paper in the flask. Small amounts of acetone were added to help get the product out of the beaker. Soon after, a clean, dry beaker was labeled with the group name and weighed at 108.845 g. The filter paper with the product was moved to the new beaker and was stored by the teacher. Finally, the glassware used was cleaned and put away. The following week, the beaker with the filter paper and product was weighed at 11.550 g. and the percent yield was calculated.

**Conclusions**

The experiment overall helped explain the formula, NiCl2⋅6 H2O (aq) + 3 H2NCH2CH2NH2 (aq) → [Ni(H2NCH2CH2NH2)3]Cl2 (s) + 6 H2O (l). The procedure provided gave instruction, but with the formula, one was able to draw the conclusion of what became solid and why. The product was solid because the chemicals that made it up were insoluble. The weighted objects that were collected throughout the experiment were able to ultimately help calculate the percent yield. With the grams of the ethylenediamine solution, 1.165 g converted to 0.0198 moles and then converted to moles and grams of the solution using the molar mass for the theoretical yield. The theoretical yield was 1.310 g. The actual yield was calculated the next week by weighing the product in grams which was 1.383 g. Then taking the two masses, the actual divided by the theoretical multiplied by one hundred, produced 105.6% as the percent yield. The percent yield usually is not above 100%, however, this could be due to human error such as rounding or weight errors.