

# SYNTHESIS AND STOICHIOMETRIC ANALYSIS OF HEXAAMMINENICKEL(II)CHLORIDE

## Abstract

In this experiment, we synthesize complex salt hexaamminenickel (II) chloride via crystallization and purification methods. We also add a known excess quantity of an acid to neutralize the ammonia hydroxide. This is to obtain the amount of ammonia present in the product. We start the experiment by adding the green solution which is the nickel (II) chloride with the concentrated ammonia. Then, the solution turns into purple colour. Based on the calculations, average amount of  $NH_3$  found in the product is 33.67% while for chloride ions is 19.84%.

## 1.0 Introduction

Hexaamminenickel (II) chloride,  $[Ni(NH_3)_6]^{2+} Cl_2^-$ , is a coordination compound whose nickel atom and six ammonia molecules constitute the cation; the anion is the chloride ion. In aqueous solution nickel ion ( $Ni^{2+}$ ;  $Ni(II)$ ) is surrounded by six water molecules which are actually bonded to the central metal ion. This complex is called the hexaquanickel(II) ion. When aqueous nickel chloride is precipitated from solution, the nickel ions carry their six water molecules into the crystals and so solid nickel(II) chloride is hydrated, has the formula  $[Ni(H_2O)_6]Cl_2$ , and is more properly called hexaquanickel(II) chloride. If ammonia is added to a solution of this salt, ammonia molecules compete with the water in bonding  $Ni^{2+}$  and, because the ammonia forms a stronger bond than water, the ammonia replaces the water according to:



Objective of this experiment is to synthesis a complex which is complex salt hexaamminenickel (II) chloride via crystallization and purification methods. Other than that, to quantify chemical component in a chemical complex via back titration method.

# Synthesis And Stoichiometric Analysis Of Hexaamminenickel Ii Chloride

**S Ben Porath**



**Synthesis And Stoichiometric Analysis Of Hexaamminenickel Ii Chloride:**  
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