

**Maya Dany (Chemistry B 2015)**

**Balai Riset dan Standardisasi Industri Surabaya**

**Jl. Jagir Wonokromo No. 360, Panjang Jiwo, Kec. Tenggilis Mejoyo, Surabaya,  
Jawa Timur 60244**

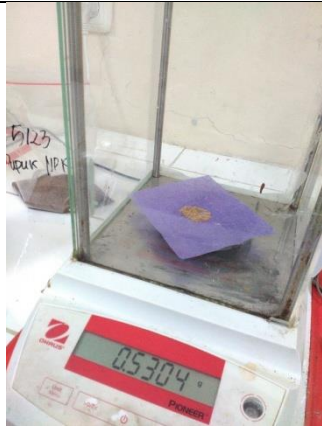
I have internship experience at Balai Riset dan Standardisasi Industri Surabaya on 2<sup>nd</sup> July – 31<sup>st</sup> July 2018. One of my tasks during my internship was analysis of nitrogen levels on soil, fertilizer, soy sauce, and any food samples using Kjeldahl method, which can define total nitrogen contained on samples. The Kjeldahl method consist destruction, distillation, and titration.

The destruction step is to destruct compound into their elements using concentrated acids. With HCl as concentrated acids, carbon and hydrogen are oxidized to carbon monoxide, carbon dioxide, water, and nitrogen will be converted into ammonium sulfate. To accelerate the destruction, Selenium mixture is added as a catalyst. The destruction process was carried out at a temperature of 400°C for 2 hours and produced a colorless solution.

In the distillation step, ammonium sulfate is converted into ammonia by adding NaOH solution until the solution is alkaline and heated. The liberated ammonia is captured by an acidic solution. The acidic solution used in this analysis is boric acid solution. For perfect contact, the end of the pipe must be in contact with the solution until it is submerged. Distillation is ended when all ammonia has been distilled completely using the Conway indicator.

When the distillate is full, the solution is titrated with HCl. HCl will react with the distillate, marked by a change in color to red. The result of the titration is then calculated by %N, by formula

$$\%N = \frac{(titration\ volume - blanko\ volume) \times N\ HCl \times Mr\ N \times f_p}{sample\ mass} \times 100\%$$



Sample and selenium weighing



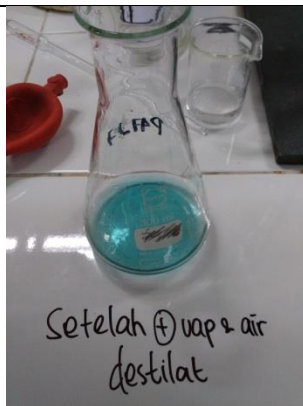
Sample and selenium were put into Kjeldahl flask



Destruction step



Distillation step



Before being titrated by HCl



After being titrated by HCl