3 MATERIALS AND METHODS

3.1 Methods

Inhibitor preparations
I. Pineapple peels was dried and grind into powder form.
II. Extract the solution by distillation process after stirred with methanol for 2 days.

Carbon steel coupons
I. Polish machine and sand paper are used to scrub the steels coupon to expose clean, shining surface and washed with distilled water and ethanol.
II. The coupon is weighed before dipped in the HCL solution for 7 days.

Weight loss method
I. Brushed the coupon after dipped in HCL by using Sb₂O₃ and SnCl₂.
II. The coupon is weighed again after dried in acetone hence the weight loss can be calculated

Analysis
I. Effect of temperature, concentration of inhibitor and molarity of acid.
II. Components found in pineapple peels that can prevent corrosion.

Figure 3.1: Flowchart of the experimental method
3.2 Overview

There are three parameters for this research that may affect the corrosion rate. The parameters used in this research are concentration of acid used, molarity of corrosion inhibitor and temperature. Weight loss method is used to identify the corrosion rate and inhibition efficiency at each parameter.

3.3 Materials

3.3.1 Sample preparation

Chemicals can be obtained from various sources such as Sigma Aldrich (hydrochloric acid 99.9%, ethanol 99.9%, 1, 5-diphenylcarbonzone (DPC), antimony trioxide (Sb2O3), stannous chloride (SnCl2)) and Merck Malaysia (acetone). The pineapples peels are dried in oven at 60°C as shown in Figure 3.3 and grind into powder form by using manual blender. Figure 3.4 shows the pineapple peels in powder form.

![Figure 3.2: Pineapples peels after dried in oven at 60°C after 12 hours](image-url)
3.3.2 Preparation of inhibitor

The powder of pineapple peels was mixed with the methanol and placed in the fume hood to prevent methanol from vaporised as Figure 3.5. After two days, filter paper was used to separate the liquid from the solid particle. This solution need to be extract before being tested as a corrosion inhibitor as shown in Figure 3.7.

Figure 3.3: Pineapple peels in powder form after grind by using grinder

Figure 3.4: Mixture of pineapple peels and methanol after 2 days stirred inside the fume hood