CHAPTER I

INTRODUCTION

1.1 Background

Chemical change or chemical reaction is closely related to time. If we observe chemical reactions a day around us there are so many rapid reactions such as the combustion process, but there is also a very slow reaction such as the conversion of organic matter (fossils) into the process of converting petroleum or rock into marrner. Every chemical reaction takes place with a certain rate and requires certain conditions anyway. The reaction rate is defined as the rate of the reduction reactants per unit time or if the terms of the product then the reaction rate is the rate of product formation per unit time.

Composite is a material that formed from a combination of two or more materials, where the material mechanical properties are different. Because the characteristic of the composer is differences, so it will produce a new material that has differences of mechanical properties and characteristic from the base materials or composer itself. Motor body is an example of a composite that is common and seen daily.

Currently there are many modifications in the automotive field, one of them in modifying the vehicle body (motor). Fairly easy and quick to make fans of motorcycle racing to change the look of their vehicles in order to become more attractive. Manufacture of fiber

body material is relatively easy to form glass fiber, resin and catalyst. However, in this body manufacture is not that simple, because there are many aspects that should be considered and noticed such us weight, load, strength, aerodynamic etc.

A catalyst (Oswald 1902) is a substance that can speed up the reaction, without consumed by the reaction, it does not mean not reacting which is affecting the rate of reaction without undergoing chemical changes at the end of the reaction. The composition of the base material to form a fiber body has a different ratio, as needed. The amount of catalyst in a mixture of basic ingredients can speed up the process of making fiber body (speed up the reaction).

Based on the properties of catalyst that can speed up the reaction, it is sometimes in the manufacture of motor body using the number or composition of the catalyst suit makers, without considering other factors that may influence or out of the function of body itself. With the ideal mixture is expected to produce the optimal results and maximum strength to obtain effective results.

To measure the strength of this specimen (fiber body) that consist of catalyst or hardener, resin 157 BTQN and also fiberglass, tensile, impact and bending test one conducted and the macrostructure of it that can be used to assume the result.

Based on the description above, in this study the authors will conduct a research on how much the catalyst will influence the

mechanical properties of this composite by variation 2.5%, 5%, 10% and 20% of resin. The process is conducted using the composition of catalyst with resin in 4 different ratios then same condition of fiberglass and the room temperature to dry the mixture of it. Then the next is analyze the result after test and will be compared between each composition of catalyst.

1.2 Objectives

The objectives of this research are as follow:

1. Study the influence of the catalyst in the manufacture of composite in different compositions.
2. Analyze the composite (motor body) strength based on the amount of catalyst.
3. Produce the good quality of composite that can be used in the motorcycle body modification.

1.3 Experimental Limitation

Scope area of this final project contains:

1. The main material used is in the form of resin 157 BTQN, catalyst and fiberglass.
2. The catalyst variations are 2.5%, 5%, 10% and 20% of resin in the composite manufacturing.
3. Specimens will be tested by impact, bending and tensile test.
4. Drying specimen is done at room temperature.

1.4 Methodology

The methodology that used is an observation. Observation that will be conducted by making specimen then do the test and get the data of research which is used as the main point of analysis.

Observation at some places making body fiber modification at Surakarta is the first step in this study. Ensuring by asking and studying literature is required to prevent mistakes that may occur in this study. Secondly is making the specimen in 4 variations then test it at Mechanical Properties Lab in Diploma Degree Gajah Mada University.

1.5 Writing Systematic

The writing systematic in this final project is:

CHAPTER I INTRODUCTION

Consist of background, objectives, problem limitation, methodology, and writing systematic.

CHAPTER II BASIC THEORY

In this chapter will be explaining about the fundamental theory and basic that should be known of composite, resin 157 BTQN, catalyst, fiberglass and about the test tools.

CHAPTER III RESEARCH METHODOLOGY

To get the good result, the method that will be used has been good and clear. Therefore, this chapter will show the process and procedure to conduct this final project.

CHAPTER IV RESULT AND DISCUSSION

The test result will be discussed here; all of test that conducted will be shown the report about impact, bending, tensile and the images of composite structure.

CHAPTER V CONCLUSSION AND SUGGESTION

Conclusion of the research is about the influence of catalyst in making composite and some suggestions to make the next investigation run well.