

UNIVERSITI TEKNOLOGI MARA

PARAMETER DEVELOPMENT OF
ENVIRONMENTALLY FRIENDLY LIPASE
ENZYMATIC DEINKING SYSTEM

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ABSTRACT

Enzymatic deinking is the environmentally friendly process that used to recycle the secondary fiber which is mostly are mixed office waste-paper (MOW). This process is the replacement of the traditional deinking process that uses a lot of chemical. The application of enzyme in the deinking process were reducing the uses of chemical and lower the waste pretreatment in the pulp and paper industries. Lipase is the enzyme that used to remove the oil-carrier-based inks or as the pitch control. The conducted of lipase assay shows that the optimum conditions of the lipase enzyme that are at temperature 40°C, 7.0 of pH value and concentration at 10 U/ml. The result of the deinking process shows that the paper were cleaning up by reducing the ink attachment to the paper and the strength of the surface of the paper were reducing due to the recycle of secondary fiber process.

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Nowadays, paper has become the most widely used out of all the writing materials that mankind has employed down through the ages. The first paper where discover in the third millennium BC in Egypt (PaperOnline, 2015). There are many advantages of paper that is a sustainable product such as, it is made from forest resource that can renewable and increasing the uses of it. Paper also is the biodegradable product that can be recycle and reuse as it is the source of renewable energy. As the population of human and development of country are increasing by time, the high demand of the paper needed around the world were indirectly shown a big potential to gain profit by paper making. Therefore, the paper making or pulp and paper industries were growing rapidly.

However, as the times passes by, this boundless growth of the industries that making paper are start making and resulting many problems. This industries are fifth largest industrial consumer of energy in the world, based on the Worldwatch Institute. Therefore, it is tend to eliminate their carbon dioxide emissions due to the uses of the by-products such as fuel. This paper making industry also tend to uses huge amounts of water and other chemicals that is harmful to environment that can cause air and water pollution when the waste treatment are not handling carefully. But, the main problem that can see is the problem in raw material of paper making that is forest. This because the cutting down the trees are affected the environmental system. So, to overcome this ecosystems problem, the recycle process were introduce by recycling back the used paper. As the waste paper are used in recycling process, the problem due to the cutting down the trees and destroying the forest can be reduce and it's can saves millions trees that are useful in reducing greenhouse effect. It's also can reduce the need of the landfills area. But there's still contains some problem regarding the recycling process method.