

**A STUDY OF ALUMINIUM WINDOW FRAMES
PREFERENCE MATERIALS AMONG
PROPERTY BUYERS**

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**SCHOOL OF CIVIL ENGINEERING
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PREFERENCE MATERIALS AMONG PROPERTY BUYERS**

By

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ABSTRACT

The characteristics of the frame materials have significant impacts on the properties of a window. A window itself plays a crucial role in determining the overall energy performance of the building. This study analyses frame types of aluminium. Letting light into a cave or crude structure allowed its inhabitants to better perform tasks and navigate their surroundings, alerting them to the day's cycle and keeping them in sync with it something that we understand is vital to human health and emotional health and wellbeing. Aluminium window frames are valued for their slim profile but durability, along with their low maintenance and strength. Due to their lightweight construction and strength, aluminium window frames are able to be configured in a variety of ways. This makes them beneficial for multi-panel systems or large windows. However, aluminium frames are not recommended in wet areas or areas that have high levels of salty water and air due to their corrosion. There was a time when choosing the right window frames meant you had to make a trade-off between strength and aesthetics. If you wanted a more resilient, stronger frame, you would almost always be presented with a bulky exterior. Well, that was until aluminium frame windows appeared on the scene. In no time, aluminium has climbed popularity charts in interior design and is now one of the most preferred materials for window frames. In fact, aluminium frame windows are just perfect for giving your personal spaces a facelift with a sleek, neat look.

ABSTRAK

Ciri-ciri bahan bingkai mempunyai kesan yang ketara ke atas sifat tingkap. Tingkap itu sendiri memainkan peranan penting dalam menentukan prestasi tenaga keseluruhan bangunan. Kajian ini menganalisis jenis bingkai aluminium. Membiarkan cahaya masuk ke dalam gua atau struktur mentah membolehkan penduduknya melaksanakan tugas dengan lebih baik dan menavigasi persekitaran mereka, menyedarkan mereka tentang kitaran hari itu dan memastikan mereka selari dengannya sesuatu yang kami fahami penting untuk kesihatan manusia serta kesihatan emosi dan kesejahteraan. Bingkai tingkap aluminium dihargai kerana profilnya yang tipis tetapi tahan lasak, bersama-sama dengan penyelenggaraan dan kekuatan yang rendah. Oleh kerana pembinaan dan kekuatannya yang ringan, bingkai tingkap aluminium boleh dikonfigurasikan dalam pelbagai cara. Ini menjadikan ia bermanfaat untuk sistem berbilang panel atau tingkap besar. Walau bagaimanapun, bingkai aluminium tidak disyorkan di kawasan basah atau kawasan yang mempunyai paras air dan udara masin yang tinggi disebabkan oleh hakisannya. Terdapat masa apabila memilih bingkai tingkap yang betul bermakna anda perlu membuat pertukaran antara kekuatan dan estetika. Jika anda mahukan bingkai yang lebih berdaya tahan, lebih kukuh, anda akan hampir selalu disajikan dengan bahagian luar yang besar. Nah, itu sehingga tingkap bingkai aluminium muncul di tempat kejadian. Dalam masa yang singkat, aluminium telah mendaki carta populariti dalam reka bentuk dalaman dan kini merupakan salah satu bahan yang paling disukai untuk bingkai tingkap. Malah, tingkap bingkai aluminium sangat sesuai untuk memberikan ruang peribadi anda peningkatan dengan rupa yang kemas dan rapi.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

According to (Team McCoy Mart, 2018), windows play a crucial role in the decoration of your home or place of business since they serve as both a decorative element and a weather barrier that shields us and our building from the elements. Most of us do not need to consider the material they are constructed from unless we are considering replacing windows for our house or even choosing the windows for a new building project. We see them and use them every day. The perfect window can improve your home while also assisting in lowering our energy use. Windows come in a variety of shapes, sizes, and styles, but choosing the correct framing material is just as crucial as choosing the right window.

However, selecting the right windows for our home can be amazing given all the styles, materials, and features that are available to choose from. In addition, since this project is a major funding and new windows are expected to last up to 20 years, doing some preparation before we decide can save on headaches later. Windows are built either from Unplasticized Poly-Vinyl Chloride (UPVC), wood, aluminium, fiberglass, and composite windows. Each material has its own set of pros and cons but in the end, it all depends on which suits us the best. Windows and the way we dress them is an integral part of how our home looks and feels. But often, we miss the type of windows to choose, which ones will add the most benefit and how best to maintain them (Danny Lipford, 2007).

A homeowner's initial choice is whether to install "new" or "replacement" windows. The distinction is that new windows are typically installed when the homeowner wants to change the current window opening's size or shape and replace

it with a brand-new window. The installation and related craftsmanship are often the responsibility of a contractor. Even while replacement windows are typically less expensive than new ones, the extra effort raises the entire cost. Installing new windows gives you the opportunity to radically alter the look and feel of your house both inside and out (Danny Lipford, 2007).

However, replacement window installation entails taking out the old windows without affecting the surrounding furnishings or frames and replacing them with new windows or sashes that are made to perfectly fit the opening. The price of replacement windows is roughly the same as that of new windows, but since installation requires less labor overall, the cost is lower. When the current frame is still in good shape or the decoration is lovely and complements the room in the house, replacement windows are a terrific option. Obviously, the work cost savings are beneficial when a budget is a factor. Replacement windows can come in stock sizes or can simply be ordered in any size to fit any opening, depending on the manufacturer. (Danny Lipford, 2007).

When choosing windows, you get what you pay for is a tried-and-true adage when purchasing windows. Cost is vital, no doubt, but choosing a high-quality product from a reputable manufacturer is even more crucial. It is crucial to pick a high-quality window that will last for a long time and offer energy savings, ease of use, and low maintenance. (Danny Lipford, 2007).

Because fogging between the panes is a regular issue with insulated glass windows, carefully examine the warranties provided by the various window manufacturers, particularly those that pertain to the glass itself. A well-known business with a strong reputation will benefit you in this situation. If your window experiences issues or needs new parts or sashes in the future, companies who have

been in business for a while are more likely to still be in business (2007). There are a few ways to locate a reputable window installer, but your best option is to first decide on the type of window you want, then search for a company that has been specifically trained by the manufacturer (Danny Lipford, 2007).

These days, aluminium windows are very popular. They are attractive, strong, simple to maintain, and allow you to be as creative as you like. These windows add significantly to the energy efficiency of your home while being lightweight and completely weatherproof. Now, architects use aluminium due to its attractive insulating power, colour affinity, and numerous other practical features (Monalisa Patel, 2021).

Aluminum is the same material that is already utilized for storefronts and glass curtain walls. It is unaffected by moisture, porosity, expansion brought on by sporadic sun exposure, or changes in moisture content, aside from strength and durability. Aluminum's coated or anodized coating is essentially everlasting. Aluminium windows nearly never need maintenance (Monalisa Patel, 2021).

Perhaps the most significant factor in aluminum's widespread use as a window material is its ductility (ability to take on specific shapes) and flexibility. Due to its ductility, aluminium may be expressed into intricate cross sections that are specifically created to simplify window construction. For instance, continuous circular, hollow intrusions known as screw splines are frequently used to link horizontal and vertical frame parts in aluminium cross sections (Monalisa Patel, 2021).

Due to the flexibility of aluminum, snap-on carving can be used to attach two separate aluminum sections together without the use of fasteners. For instance, glazing stops in curtain walls and windows made of aluminum are simply break on

(no need for adding screws or any other fastening material). A larger window with a common mullion can also be created without the need of fasteners by simply snapping together two aluminum windows using matched mullion profiles (Monalisa Patel, 2021).

Both residential and commercial buildings have aluminum windows. They are more commonly used in schools, hospitals, and other establishments since they can better block out noise than other types of windows. A properly assembled aluminum installation virtually ever has air spaces where sound can pass through, which is typically the case with timber windows (Monalisa Patel, 2021).

Aluminum is easily formed into a wide range of shapes and may be painted any color you choose. As a result, you can achieve the exact appearance that you like. Different styles of aluminum window frames are available such as common window designs include casement, sliding frames, single- and double-hung windows, bifold windows, and tilt and turn windows (Monalisa Patel, 2021).

1.2 Objectives

- a. To identify all the criteria for the aluminium preference window frames.
- b. To determine aluminium window frames as the best preference window frames.
- c. To assess to the property buyer and public to choose aluminium window frames for their uses.

1.3 Problem Statement

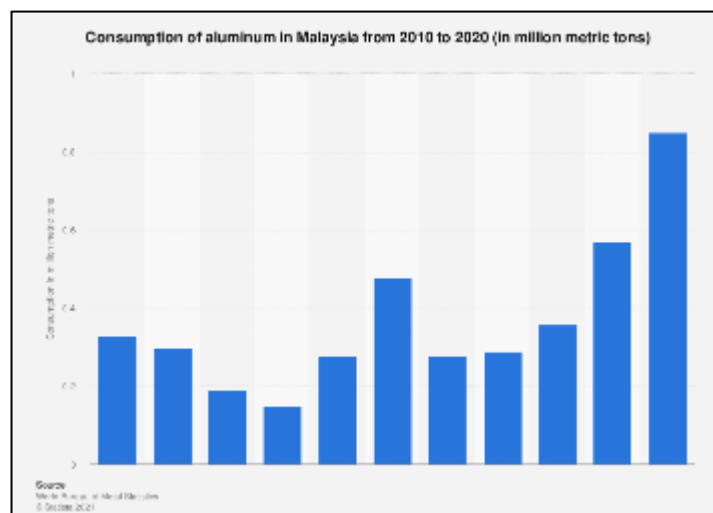
The appearance of aluminum window frames is one of their stated problems. Aluminium is typically seen as being significantly less appealing than timber windows. Aluminum can look less appealing than wood, which tends to provide a more natural and refined appearance. However, it must be noted that aluminum can be modified to match any color or design (Team McCoy Mart, 2021).

Next, the problem statement is oxidation and corrosion of aluminum window frames. Metal oxidation is a natural process that can eventually cause aluminum frames to corrode. Over time, aluminum windows will oxidize, causing a hollow and the production of white residue. Aluminum is also vulnerable to corrosion if appropriate steps are not taken to combat electrolysis (Team McCoyMart, 2021).

Besides that, aluminium window frames lose heat and interior condensation. Because aluminum is a powerful thermal conductor, aluminum windows may not perform well in cold climates because heat will escape through the frame. Additionally, aluminum frames permit moisture or even frost to develop on the inside of the window, which can provide a variety of problems (Team McCoy Mart).

According to the World Bureau of Metal Statistics, the aluminum consumption in Malaysia amounted to approximately 0.85 million metric tons in 2020. This value increased since 2010, in which the consumption of aluminium amounted to approximately 0.33 million metric tons.

Figure 1.1: Consumption of aluminium in Malaysia from 2010 to 2020



1.4 Scope and limitations of the studies

This research has many purposes which will define the study as well as to help researchers achieve their objectives. Researchers can do the analysis more effectively in the range of scope of study. The location of research is in Malaysia. The respondents involved are civil servants, students, contractors and citizens.

This study was carried out to analyze public perceptions which is related to project management in construction and to propose aluminum window frames that can make changes in choices to choose the best window. The scope of the study will focus on identifying all the criteria for the aluminum preference window frames (Team McCoy Mart, 2021). A study area has been chosen which is in Malaysia. According to (Thompson Creek, 2020), window frames surround and support the entire window system with an operational or stationary framework that includes the head, sill, and jamb. Without a window frame, the panes of glass have nothing to hold them in place. Frames also keep windows tightly firmly in place inside the wall of a building.

Next, since there are different materials of windows frame, this study will focus on identifying which window is best preference among property buyers. Because this research studies can help them in choosing aluminum window frames for the contractors and public.

The selection of window frames material is important in the construction. If we choose the best window, we assess to the property buyer and public to choose aluminum window frames for their uses.

In this study, there are several limitations study that have been identified. The following are the limitations of the study in the writing of this study in the writing of this study.

- i. This study only examines the criteria for the aluminium preference window frames.
- ii. This study only examines aluminium window frames is the best preference window frames.
- iii. This study only examines to assess to the property buyer and public to choose aluminium window frames for their uses.

1.5 Significance of study

The significance of this study will bring the benefit by selecting aluminum window frames to be used considering window frame materials plays an important role in construction today. The selection of most economical windows will give greater impact to the construction nowadays.

- i. Student

This study will lead them to have more research about aluminium window frames as proposed window frames. Their research can be published to have the readers to be exposed more about aluminium window frames.

- ii. Civil servants

This study will give them an understanding about aluminium window frames so that they can choose aluminium window frame as their first choice if they own houses.

- iii. Contractor

This study will give them an understanding about aluminium window frames so that they can choose aluminium window frame as their first choice if they own houses. Other than that, they also can recommend to their clients to choose aluminium window frames.

- iv. Public

This study will give them an understanding about aluminium window frames so that they can choose aluminium window frame as their first choice if they own houses.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Aluminium windows are used extensively through building domestically and commercially. Based on your budget, your aesthetic preferences, and the size of your openings, you can choose standard residential framing all online and then quickly and easily customize them to your exact requirements. Standard residential glazing mainly, awning windows, sliding windows, fixed windows, sliding & stacking doors will generally be the most economical and well-suited solutions used in domestic buildings (ez windows, 2022).

2.2 The Common Types of Aluminium Windows Available

When deciding on the type of windows you want for your home, there are several things to consider. Some of the fundamental considerations you should have at the outset are the area occupied, the upkeep required, and the simplicity of usage. Here are some options that are available to you for your home. (Team McCoy Mart, 2021):

2.2.1 Aluminium Bi fold Windows

These windows require very little upkeep and are very simple to clean. They provide excellent access to the outdoor area. These kinds of windows offer a long-term smooth operation. Aluminium bi-fold windows have a clear area between the frames and open to be stacked at a side (Team McCoy Mart, 2021).

2.2.2 Aluminium Tilt Turn Windows

Since these windows open inward, they are ideal for homes with small balconies or little available space outside. These windows offer both horizontal and vertical