POLYTECHNIC SULTAN SALAHUDDIN ABDUL AZIZ SHAH

PERFECTIVE ANGLE PAINT

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CIVIL ENGINEERING DEPARTMENT SESION JUN

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TITLE : PERFECTIVE ANGLE PAINT

SESSION : JUNE 2019

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as a project supervisor on a date

APPRECIATION

Polytechnic Sultan Salahuddin Abdul Aziz Shah is one way and the gateway to the world of work. This is where knowledge is gained and used as a guide to determine direction and purpose after furthering studies at Sultan Salahuddin Abdul Aziz Shah's polytechnic. Here too, every student taking a Diploma course must complete a final semester project for presentation. With this in mind, our team came up with the concepts and ideas that came from applying the subject we learned to implement a project called "Perfective Angle Paint". Thanks to the Allah wish for His grace, our group can also complete our project that has been given during the 4 and 5 semesters. We would like to express our sincere thanks and sincere thanks to our group project supervisor, Pn Mariam Binti Abdullah and project coordinator Pn Nazrizam Binti Ab Wahab for the guidance and discussions provided throughout the project. Also do not forget to thank Mr. Nor Hisham as an experienced welder who provided guidance in designing our project. Thanks also to those who cooperated, either directly or indirectly assisting in the project's production. We admit that implementing and completing this project is not an easy task. Without our supervisors and those who helped us we would not have been able to do this project properly.

ABSTRACT

Nowadays, we paint a building entirely using paint brushes, but there are some parts of the building that are hard to paint like in the corner, the part between the walls with the window frames and the part between the walls and the ceiling. As a proof, the painters will painted the wall part firstly, and then they will painted the hard part because the parts need a more painting technique. This has slightly delayed the process of painting.

Currently, the use of paint brushes for painting work is still being used in Malaysia. The use of these paint brushes can make it easy to paint works done quickly and neatly. However, if observed in building parts such as wall edges, between the walls and the window frames and between the walls and the ceiling, for example, there are some unpleasant paint effects due to the use of paint brushes and inappropriate painting techniques.

In addition, there are some problems faced by users where the time taken to complete the painting work in the corners of the building takes too long. This is because, these corner areas require the right time and technique to paint the nuts on the part.

Furthermore, the use of brushes for painting on the corners is difficult and complicated because at some corner areas, the use of adhesive tape is used to prevent paint from being exposed to unnecessary areas. This has slightly delayed painting work.

Finally, the use of a more brush causes a high cost. This is because consumers need to buy a more brush to paint the parts with different colours. Then, the material in the paint brush also does not know where it comes from because there are paint brushes made from animal fur that can’t touched by Muslims.

Thus with all the problem statements a product named Perfective Angle Paint (PAP) was created to solve this problem. The PAP is a paint brush specially designed to paint the hard parts found in the building as in the corner, the part between the walls and the window frames and the part between the walls and the ceiling. The product,

named Perfective Angle Paint, has its own unique designs such as "Perfective", which means more to the neat, "Angle" which means 90 ° and 180 ° specific angles, and "Paint" which is specific for water type paint. The PAP also comes with three variants that can be easily changed. The three variants is to paint deep edges, to paint outer edges and to paint sections between walls with window frames and ceilings.

Keywords – paint, angle, brush

ABSTRAK

Pada masa kini, kita mengecat dinding bangunan sepenuhnya menggunakan berus cat, namun terdapat beberapa bahagian bangunan yang sukar dilukis seperti di sudut, bahagian antara dinding dengan bingkai tingkap dan bahagian antara dinding dan siling. Sebagai bukti, pengecat akan mengecat dinding pada bahagian pertama, dan kemudian mereka akan mengecat pada bahagian yang sukar kerana bahagian ini memerlukan teknik mengecat yang lebih peka. Perkara ini akan menyebabkan proses mengecat kawasan dinding tersebut menjadi lambat.

Kini, penggunaan berus cat untuk mengecat masih digunakan di Malaysia. Penggunaan berus cat ini boleh memudahkan kerja cat dengan cepat dan kemas. Walau bagaimanapun, jika diperhatikan di bahagian bangunan seperti tepi dinding, di antara dinding dan bingkai tingkap dan di antara dinding dengan siling, terdapat beberapa kesan cat di tempat yang tidak sepatutnya kerana penggunaan berus cat dan teknik mengecat yang tidak sesuai digunakan.

Di samping itu, terdapat beberapa masalah yang dihadapi oleh pengguna di mana masa yang diambil untuk menyelesaikan kerja mengecat dibahagian sudut-sudut bangunan mengambil masa yang lama. Ini kerana, kawasan sudut ini memerlukan masa dan teknik yang tepat untuk mengecat pada sudut-sudut di bahagian itu.

Selain itu, penggunaan berus cat untuk mengecat di sudut adalah sukar dan rumit kerana di beberapa kawasan sudut, penggunaan pita pelekat digunakan untuk mengelakkan cat daripada terdedah kepada kawasan yang tidak perlu. Ini menyebabkan proses mengecat menjadi lama untuk disiapkan.

Akhirnya, penggunaan berus cat yang berlebihan menyebabkan kos yang tinggi. Ini kerana pengguna perlu membeli dua atau lebih berus cat untuk mengecat bahagian sudut dengan warna yang berbeza. Kemudian, material yang digunakan oleh berus cat juga tidak tahu dari mana ia berasal kerana terdapat berus cat yang diperbuat daripada bulu haiwan yang tidak dapat disentuh oleh orang Islam.

Oleh itu dengan semua kenyataan masalah, maka kami menghasilkan produk yang bernama ***"Perfective Angle Paint (PAP)"*** untuk menyelesaikan masalah ini. PAP adalah berus cat yang direka khas untuk mengecat bahagian sukar yang terdapat di bangunan seperti di sudut, bahagian antara dinding dan bingkai tingkap dan bahagian antara dinding dan siling. Perfective Angle Paint, mempunyai reka bentuk uniknya sendiri seperti "Perfective", yang bermaksud lebih kepada nilai sempurna "Sudut" yang bererti sudut spesifik 90 ° dan 180 °, dan "Cat" yang khusus untuk cat jenis air . PAP juga dilengkapi dengan tiga bentuk yang mudah diubah. Ketiga-tiga bentuk ini adalah untuk melukis tepi dalam, untuk melukis tepi luar dan cat bahagian antara dinding dengan bingkai tingkap dan siling.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The rapid development of today has increased the technology level to a higher level. The painting process is also no exception. Therefore the careful planning system in upgrading the painting process is a hot issue discussed. The workers are usually manually painting by hand or using a spray gun.

Normally, almost every painting tools is the same in terms of function but the difference is in terms of the design and cost of such a painting tool. Therefore, we take an innovation to design and improve to produce different tools in terms of tool design in the market today and more user-friendly.

Perfective Angle Paint (PAP) is a paint brush created and specially designed to paint in difficult part of buildings such as in corners, walls between and window frames, and walls between and ceilings. PAP also saves time and energy when doing the painting process. This PAP revenue is a new step to make it easier for users to work on painting.

'Perfective' here means will have a more neat effect to paint, 'Angle' which means the specific angle for this PAP is 90° and 180°, and 'Paint' which is specific for water type paint only.

Through this project, we as students can apply all theories studied more effectively so that the success of the project can be implemented successfully. Developments in engineering are increasingly gaining momentum and this encourages the use of modern technology as well as various unified ideas of producing a good product. The new range of equipment can help a few in the future.

1.2 BACKGROUND RESEARCH

In today's market, many painting tools designed by humans to do painting in Malaysia or abroad. Furthermore, there are many paint-painting designs such as paint brushes in Malaysia that are used to paint a wall surface or especially a small room. Additionally, the cost to buy this tool is a bit high. The painting tool is of high value because the tool produces a very beautiful and tidy paint quality. From the statistics, many people still love to paint by using a manual way of using paint brushes. This is because they think using brush paint, so painting a surface or object will be easier. The priority problem is that the tool does not have multiple equipment and capabilities with the presence of multiple functions for users to use these tools.

1.3 PROBLEM STATEMENT

Nowadays, the paint brushes is still being used for painting work inside a building. Before implementing the "Perfective Angle Paint" (PAP) project, the process of identifying the problem is implemented first. With this, the problems that arise can be resolved smoothly. The design is intended to solve a problem with the product or give it a new image. The design will be generated from identified problems. It aims to find the necessary criteria for the project that we will take to solve the problems that arise.

There are 3 problem statements that can be stated. First, the time taken to complete a corner area will take a long time. This is because, a 1x1 meter wall takes 3-4 minutes to finish painting in the section.

Second, there is no nodding when making painting process. This is because the painting method nowadays is still used adhesive tape to make sure the work of painting is done and to prevent paint from being exposed to unnecessary areas. This will cause the painting to work a bit slow. It also makes difficult and complicated.

Figure 1.1 Attaching tape to the ceiling

The third is, the used of many brush also can cause a high spending cost. This is because consumers need to buy more brush to paint with different colors. Then, the material that used in the paint brush doesn't know where it comes from because there are paint brushes mad from animal fur that can't be touched by Muslims. In addition, there is a cheap paint brush sold in the market but the quality of the brush is not good.

1.4 OBJECTIVES OF THE PROJECT

To implement and complete this project there are 3 objectives we have set, the first one to speed up the time to paint a wall in a difficult part. This is because the time taken to paint a wall using a paint brush takes 3-4 minutes to a wall measuring 1 x 1 meters. With our 'Perfective Angle Paint' (PAP) project, time can be accelerated in 20%.

The second objective is to facilitate painting on a hard wall part. Through this project, we believe that painting work, for example, in the inner corner, outer vertices, around the window frame, the corner between walls and coins is easier to implement. Additionally, PAP has been specified for two types of angles which is 90 degrees and 180 degrees.

For the third objective, it can save on costs. These tools can reduce costs in terms of purchasing a brush. This is because PAP has been designed in 2 corners. In addition, the spool used can also be switched.

1.5 SCOPE OF THE PROJECT

1.5.1 Inner Edge

Perfective Angle Paint (PAP) is created to facilitate painting while also saving time in 20% from 3-4 minutes for a wall measuring 1x1 meters. We all know that parts like vertices in the building are difficult to paint and take 3-4 minutes to complete. PAP are designed to solve the problem. PAP can be adjusted to angle 90. So it's easy to paint a corner in a building easily. In addition, PAP is also designed with 2 paint brush parts where 2 different colors can be painted on the inner corner at the same time while saving time in the painting process.

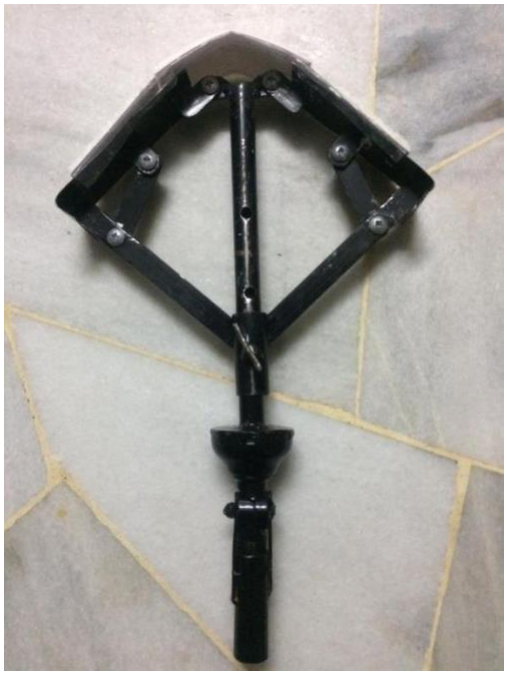


Figure 1.2 PAP for painting inner edge

1.5.2 Outer Edge

Perfective angle paint is created to facilitate painting while also saving time in the painting process. We all know that parts like the outer edges of a building are very difficult to paint and take a long time to paint. Thus, perfective angle paint is created to solve the problem. The proof is that the PAP can be adjusted to the 90's angle. It can easily paint the edges of the outside of a building easily. In addition, the PAP also has two paintbrush parts, so it can paint the outer edges of a building using two different colours at the same time, thus saving time in the painting process.

1.5.3 Between Wall and Ceiling

Perfective angle paint (PAP) created for easy painting work. As we know painting work between wall and ceiling is not easy and take a long time to be done because we have to seal the ceiling first to avoid the paint effected the ceiling and if we want to paint the ceiling and we have to seal the wall first. That why we create PAP to avoid that problem. Other than that, 180º plate has provided protector so we doesn't need to deal with the ceiling and we can save more time and energy.

Figure 1.4 PAP for painting between wall and ceiling

1.5.4 Between Wall and Window Sill

Perfective Angle Paint (PAP) was created to easily painting while also saving time in the painting process. We all know that the part of the wall between a window frame of a building is very difficult to paint and takes a long time to paint. This can be seen through the paint method today, the painters will attach the adhesive tape first to the window, so when the painting process is carried out, the window frames will not be exposed to paint because it has been covered by the adhesive tape attached. Hence, PAP was created to overcome the problem. The proof is that the PAP is 180 ° and has a barrier so it can easily paint the part between the walls and the frame of the window. The barrier found on this PAP works to prevent paint from being exposed to a window frame. With the creation of this PAP, we can save the time of painting because there is no need to attach adhesive tape to the window frame.

Figure 1.5 PAP for painting between wall and window sill

1.6 RESEARCH INTERESTS

Perfective Angle Paint (PAP) is an essential tool for painting use in small building sections. This tool is suitable for skilled and unskilled painter. For those who are skilled are like cheaters while those who are not skilled are laymen, housewives. The use of PAP tools can also be effective in using paint brushes. However, the PAP is designed with a specific design of 90 and 180 angles. With this design, PAP is easier to use for indoor angles, outer angles, frames around the windows, vertices between walls and coins. Painting works will be cleaner by using PAP.

1.7 CHAPTER SUMMARY

In conclusion, from the implementation of this project can learn the appropriate way for a study using the above topics. Objectives are a study to set a goal for a project and that goal should be achieved after the painting tool is ready to be created. Then the problem statement is a key to creating a project. This is because the problem statement can create or facilitate the problems arising from public problems. In addition, the scope of the study is a study that limits a project where the scope of the study facilitates the achievement of the objectives and goals of a project.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The research included the internet, reference books, observations and experiences.

This study is carried out by studying the paint tool and the concept of painting that has existed before. Paint tool that are on the market at this moment are good but there is still a shortage in terms of price as well as the resulting size. The paint tool on the market are now too large and the prices are very expensive. The size of a painting tool must depend on the space provided to place the tool. The price should also be reasonable and in accordance with the function and cost used to produce the painting tool.

This study was conducted by studying the paint tools and the concept of the paintings that existed before. Paint tools on the market today are good but there is still a shortage in terms of price as well as the resulting size. Paint tools on the market are now too big and prices are very expensive. The size of the drawing tool must depend on the space provided to place the tool. The price is also reasonable and according to the functions and costs used to produce the drawing tools.

The study has to be comparable to all the data to obtain the information that can really be used. It aims to ensure that the project to be produced will benefit the users.

2.2 CONCEPT

Perfective Angle Paint (PAP) has some important concepts when painting. The following information is available from the website:

2.2.1 Painting

In the process of painting, perfect perfection is often not given priority. But if using the correct equipment, the painting process will be more tidy and beautiful. There are several ways and tips to do before the painting process. Among them is to make sure the place or surface is cleansed from impurities such as rust, rubbish, oil, grease, water, old paint and dust. Use wire brushes, sandpaper, sheet sheets, or sandpaper to get the perfect surface. Use a little alcohol if there is oil. When this step ends, avoid holding the surface by hand as it may affect the surface.

Normally the operation to paint a wall on the corner of the house requires many utensils especially brushes. The tool that we created is PAP reducing the equipment used to paint. This tool has two 2 types of angles, which are 90 degree and 180 degree angle. This can be used for painting in inner corner, outer edge, vertex under window frame and vertex between wall and ceiling. This equipment may only reach a height limit of not more than 3 meters. Quality selection of sponge for painting work.

Use the primary color before painting. This is because it improves durability and life expectancy before the color fades and makes the process smooth.

2.2.2 Mistake During Painting House

i. The color is not the same as in the sample.

It often happens that the color of the resulting paint is not the same as we imagine. Do not expect too much paint color coding as thumb in the paint manufacturer's pamphlets can show real colors on the wall.

The color of the wall can be affected by the color of the other objects in an area. For example your furniture is like a closet, a sofa or a dining table. These furniture can affect the color of your home wall.

The best way is to get a real sample of paint. Apply on one piece of polystyrene, bigger and better, and try to match on the walls of your home. In this way you can see the real situation of paint on the wall. See any color changes for different times (morning, afternoon, afternoon) and try with the light of the lights inside the house.

ii. Over or underestimate the quantity of paint.

When you finish painting, there is still a lot of paint surplus. Or worse, painting work is not quite ready because the purchased paint is not enough.

Ideally you should measure first the area you want to paint 1 liter of paint can usually cover an area of 11 square meters. And do not forget to multiply the area with two if you want to sweep 2 layers of paint.

iii. Does not provide the surfaces to be painted.

All the areas to be painted should be cleaned, rubbed and if necessary to rub with sandpaper. Remove all dust, oil and so on. Close all existing fractures using the filler.

iv. Paint is mixed with water / thinner.

Ideally paint should not be mixed with anything. Open the paint cans, stirring, pour into the roller pan and rub. Do not interfere with anything. You should remember that you paint your own home instead of painting it as a career. Do not be like a paint contractor who wants to gain more by mixing paint with water.

Thinner is usually used to melt paint long ago. This method does not usually apply to you because the paint you use is usually purchased from the hardware store.

v. Not using the correct equipment.

If you have an old paint brush that you still have, I advise you to remove and buy a new one. Why? Because old paint brushes (unless they are of good quality) can be undamaged and mixed with paint and attached to the walls of your home.

At least you need to have two different brush sizes and one roller. A brush for paint on vertex / wall circumference, a brush for small and small areas and a roller for large paint work.

You can consider the options you have at the hardware store because there are many options. Choose the appropriate paint brush for all the areas to be painted.

2.2.3 Method of Painting

Before painting, make sure the walls are smooth and slippery. So rub a little with a cloth to remove dust or dirt on the wall. While for the part that arises and the lumps, here is first aligned with a scrapper. Filler is used to cover the hole in the wall if any. The trick, paste the filler mixture into the hole and let it dry overnight.

Figure 2.1 (i) Removing the dust

Painting tools are rollers, perfective angle paint, paint containers and plastic covers or newspapers. Figure 2.1 (i) shows the sealer and picture 2.1 (ii) shows the type of acrylic paint. For starters, the wall should be painted with sealer first. This sealer is like glue between acrylic paint and wall for paint longer. Sealer need to be rubbed before acrylic paint is applied.

Figure 2.1 (ii) Sweeping the sealer

We start by sweeping the sealer on the walls of the house. Apply to the edges of the wall first by using perfective angle paint. Place a newspaper to avoid dirt on the floor. When ready, apply the roller on all parts of the wall as shown below.

Figure 2.1 (iii) Painting using acrylic type paint

After the sealer is finished, then we paint using matex (lime) or acrylic type paint. A good acrylic type cat is used as it is more durable and makes the wall easier to wash. Choose indoor paint for indoor. While for outdoor exposed sun and rain, choose outdoor paint. The same way to paint is like painting a sealer before.

2.2 PREVIOUS RESEARCH

In this chapter, will be described in more detail about the study and comparison of the painting brushes in the market. Brush painting generally includes some different designs and types of fur used. Typical paint brushes act as paintings like buildings.

The common paintbrush is one of mankind's more ancient tools. Although the brush has progressed, from a simple stick with animal fur lashed to one end, to modern brushes with nylon or natural bristles set in metal ferrules, the brush was and is subject to a host of ills that occur once the brush has been used. The characteristics of paint that make it useful, e.g., adhesion and durability, make it troublesome to remove from paintbrushes. The thinner or solvent incorporated in paint can dry the brush out, leaving the bristles stiff and useless. Once the brush has been cleaned, it is an awkward object to store. It must be hung to dry lest the bristles be bent by the weight of the brush, or the cleaning solution soak into the supporting surface. It is generally inconvenient to set the brush aside until fully dry. Hence, many have experimented with methods for cleaning and storing paintbrushes after their use.

2.3.1 Painting Roller

Nowadays, the market has had various types of paint brushes that have been created. For example, it is shown in diagrams 1.6(i), 1.6(ii), 1.6(iii), with the specifications in tables.

An object of my invention is to simplify and reduce the cost of the usual painting applicator by making the painting sleeve simple to remove, easier to clean and eliminating the cost of the conventional expansible roller. Another object of my invention is to provide an improved roller type applicator for paint and the like.

A further object of my invention is to provide an inexpensive applicator of the above type, which is of simple construction and which may be economically fabricated. A still further object of my invention is to provide an applicator of the above type which could be easily and quickly assembled or disassembled for cleaning and change in g sleeves.

Jan. 28, 1964 H. A. SCHUELER PAINTING ROLLER Filed Feb. 23, 1961

INVENTOR, Henry A Schueler

i. Roller Brush Frame Plug-in Europe

Figure 2.2 (i) Roller brush frame Europe

Product Details: 4-10 inches mini roller frame made of chrome-plated steel one steel wire for use with plastic roller brush holder Magnolia 4-10 inch roller frame made of coated iron. A steel wire for use with mini rollers.

Specification :

Item	European plug-in roller brush frame
Model number	SJ-8069
Surface	Coated steel
Frame	European Plug-in Frame
Rod diameter	6mm
Size	4 inch, 6 inch, 7 inch, 8 inch, 9 inch, 10 inch
MOQ	8000pcs
Applications	For protection of European model roller
Export port	Shanghai and Ningbo

Table 2.1 (i) Specification of Roller brush Europe

Package information: Standard exported master carton

Size	Capacity carton	Carton size
6″	50 pcs	42x32x16cm
7″	50 pcs	44x32x16cm
9″	50 pcs	46x32x16cm

Table 2.1 (ii) Package information

ii. Roller brush frame screw fixed

Figure 2.2 (ii) Roller brush frame screw fixed

Attention to usage :

i. Before using, wet the roller cover and release extra water on the skin.

ii. Paint Cat, then roll back and forth on the roller tray to make room paint distributed.

iii. In use, do not let the paint dry over the surface of the roller cover.

iv. Roll in the same direction to avoid the form of snakes and zigzag.

Product information :

i. Full size polypropylene grip with fixed screw

ii. Sherlock GT compatible

iii. Useful 26 1/2 inch long length

iv. Use any Mini-Koter 6 1/2 inch rollers

Specification:

Item	The roller brush frame screw fixed
Model number	SJ-8071
Fabric	Shining and rust-proof chrome steel coated
Frame	Roller frame screw fixed with screw
Core diameter	40mm
Size	4-10 inches
MOQ	3000pcs
Export port	Shanghai and Ningbo

Table 2.2 Specification of roller brush frame screw fixed

iii. Roller easy brush frame

Figure 2.2 (iii) Roller easy brush frame

Information

Depending on the structure, there are different types of Europe and United States. And American type of cage type, easy type with end cover and fixed screw type.

Product information:

i. Easy to replace,

ii. Economical and practice

iii. With two End caps

iv. Best-selling professional roller frames in the world

Specification :

Item	Roller easy rush frame
Model number	SJ-8070
Frame surface	Chrome or Galvanized plate
Frame	With two ends
Rod diameter	6mm and 8mm
Size	4 inches 6 inches, 8 inches, 9 inches, 10 inches
MOQ	8000pcs
Applications	Suitable for US handsome roller protection
Export port	Shanghai and Ningbo

Table 2.3 (i) Roller easy brush frame

Package information: Standard exported master carton

Size	Capacity carton	Carton size
6″	50 pcs	45x35x18cm
7″	50 pcs	47x35x18cm
9″	50 pcs	49x35x18cm

Table 2.3 (ii) package information

2.3.2 Plate

Iron or plate iron is the raw material of plate in the form of sheets which in making it used as raw material in making various kinds of equipment and equipment in making industry need such as machine, transportation vehicle body, and also widely used as raw material making of household appliances.

The plate material itself can certainly be made of various types of materials. The type of plate or plate material can be grouped into two parts, ferro metal and non ferrous metal plate materials. In the market itself many sell iron plates with several types of plates that are widely used, among others as follows:

The use of aluminum alloys in lightweight protective structures is increasing. Even so, the number of experimental and computational investigations that give detailed information on such problems is limited. In an earlier paper by some of the authors, perforation experiments were performed with 15–30 mm thick AA5083-H116 aluminum plates and 20 mm diameter, 98 mm long, HRC 53 conical-nose hardened steel projectiles. In all tests, initial and residual velocities of the projectile were measured and the ballistic limit velocity of each target plate was determined. In the present paper, an analytical perforation model based on the cylindrical cavity-expansion theory has been reformulated and used to calculate the ballistic perforation resistance of the aluminum plates. In addition, non-linear finite element simulations have been carried out. The target material was modeled with the Johnson–Cook constitutive relation using 2D axisymmetric elements with adaptive rezoning. To allow ductile hole growth, a pin-hole was introduced in the target. The analytical and numerical results have been compared to the experimental findings, and good agreement was in general obtained. A parametric study was also carried out to identify the importance of the different terms of the Johnson–Cook constitutive relation on the perforation resistance of the target. The results indicate that thermal softening cannot be neglected, so an alternative procedure for identification of the material constants in the power-law constitutive relation used in the cavity-expansion theory has been proposed.

International Journal of Impact Engineering, Volume 36, Issue 3, March 2009, Pages 426-437

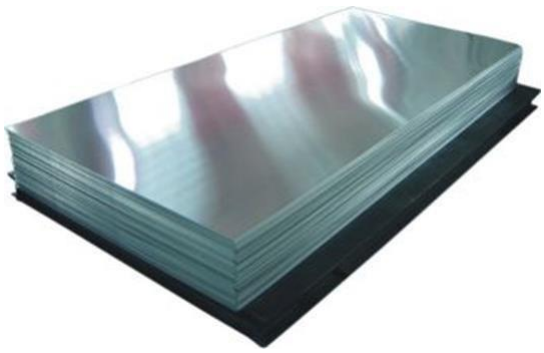


Figure 2.3 (i) Aluminum iron plate

Aluminum plates are lightweight and strong sheet plates or metal plates. Aluminum plates are anti-corrosive, non-flammable and resistant to any kind of weather. This type of plate itself is easily formed, so widely used in industry as in advertising needs.

There are two types of aluminum, such as aluminum castings that can transmit electrical and aluminum alloys with tensile strength. Aluminum also produces electric conductors that can deliver electricity well, so usually for aluminum plates that are used as raw materials in advertising or advertising industries will be carried out anodizing process is the process of making aluminum does not deliver electricity that is then heated to resist heat or heat water.

But the shortcomings of this type of plate cannot withstand acidic substances, alkalis ingredients such as soap and soda. The selling price of this aluminum plate is quite cheap, so few manufacturers use this material as its production material.

i. Stainless Steel Plate

Figure 2.3 (ii) Stainless steel plate

This type of plate is a stainless steel plate is a widely used plate in the automotive industry as a vehicle bodybuilder and is also widely used as a household appliances.

Many of the advantages of stainless steel plate are one of them is having a high rust endurance. And many industrial manufacturers do combinations or finishing to increase or produce better stainless steel quality.

ii. Iron Plate

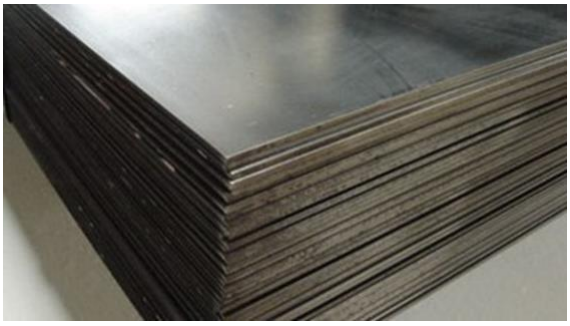


Figure 2.3 (iii) Iron plate

This type of steel plate is commonly used as a construction material because the steel plate has no strength. Usually this steel plate is used as the material of the building structure profile of building construction. Due to its strong steel properties making this kind of steel plate hard to shape. And of course the selling price of this steel plate is quite good for every single piece.

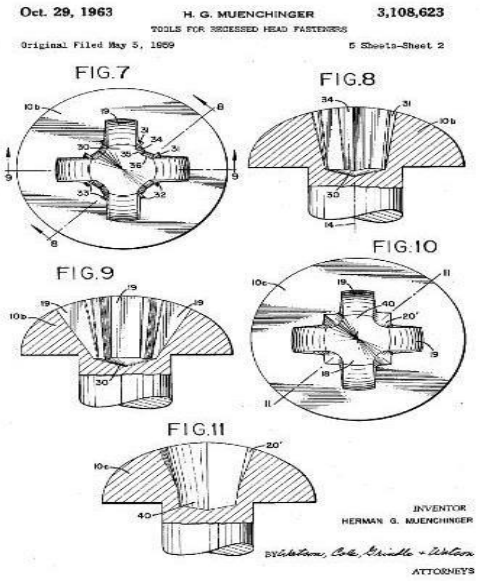
iii. Iron Brass Plate

Figure 2.3 (iv) Iron brass plate

Brass plates are the result plates of copper and zinc mixture. This type of plate is certainly stronger and harder than copper but can still be easily formed, but not as strong and as hard as steel. The colors of this brass plate are also varied there are reddish brown, yellowish yellow depending on the content of copper mixing with zinc.

Brass material is one of the conductor equipment that can deliver heat and electricity well, so this type of brass plate is widely used as raw material for wire, plate, sheet, strip, etc. Brass material is also generally resistant to corrosion.

2.3.3 Cross Recessed Truss Machine Screws



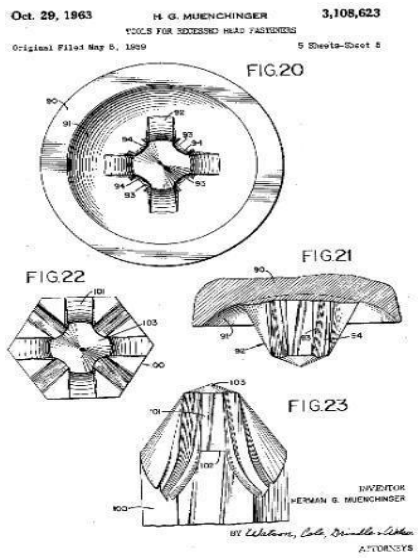


Figure 2.4 Cross recessed truss machine screws

Tools for recessed head fasteners

A tool for recessed-head fasteners, said tool having a body portion and a terminal NIB portion formed at one end of said body portion, SID NIB comprising a central core and four equiangularly spaced wings radiating therefrom, the wall of said core between adjacent wings being formed to provide a ridge extending from said body portion toward the terminal extremity of said NIB portion, said ridge being of substantially triangular transverse section and of diminishing sectional area toward said extremity, said ridge being bounded by small.

Description :

Threaded fasteners having tool-engaging recesses of the Phillips type described and claimed in United States Patent No. 2,046,839 have been widely and successfully used throughout the world. The particular recess disclosed in the said patent has more recently been improved by reducing the taper of the recess, as disclosed 'in United States Patent No. 2,474,994, thus reducing the .tendency of the screw driver to be thrust axially out of .the recess upon the application of high torque, and increasing the value of torque which may be applied before throw-out occurs.

A widespread use of the so-called Phillips recess occurs in connection with self-tapping threaded fasteners, i.e., fasteners adapted for use in connection with metals, plastics, and other materials in which previously drilled holes may be threaded or tapped in the process of driving, into such holes, fasteners provided with so-called tapping threads or teeth. The successful application of self tapping fasteners requires that the fasteners possess certain essential recess characteristics including the follow :

i. High driving torque capacity.

ii. Easy entry of the driving tool.

iii. Maximum stability of the driving tool in the fastener recess.

2.3.4 Galvanized iron pipes

Figure 2.5 Galvanized iron pipes

Research study :

Comparative study of ferrocement panels reinforced with galvanized iron and polypropylene meshes

Abstract :

Ferrocement panels reinforced with galvanized iron (GI) mesh have been in use historically, however in the regions where humidity levels are high the GI mesh tends to corrode, leading to reduced service life. Polypropylene (PP) mesh, having rust free character, may serve as an alternative to GI mesh. This paper presents an experimental study intended to compare the flexural and compressive strength behavior of ferrocement panels reinforced with GI and PP meshes. A total of 32 rectangular ferrocement panels were tested: 16 in flexure and 16 in compression. Out of 16 panels tested in flexure, 8 were reinforced with GI mesh and 8 with PP mesh. Similarly, 8 GI and PP mesh panels

each were test in compression. The specimens tested in flexure were simply supported on two short edges and were tested under four point bending. The specimens tested in compression were hinged at both ends. The parameters investigated include thickness of panels, volume fraction and the material of the mesh. All the GI mesh panels outclassed the PP mesh panels both in flexure and compression strength. However, PP mesh panels exhibited better ductility properties as compared to GI mesh panels. The load carrying capacity of both GI and PP mesh panels increased with the increase in panel thickness and number of mesh layers.

2.3.5 Paint Pad

An improved paint pad assembly is provided with a painting surface contour that is changeable from concave to flat to convex so that the paint pad can paint exterior corners, flat surfaces and interior corners with equal ease. The one-piece paint pad features hand pieces disposed on the opposing edges of the paint pad. The two-piece embodiment features an inverted U-shaped handle mounted to the opposing side edges of the paint pad via a tab and lock configuration. The paint pad is hinged in the longitudinal direction thereby enabling the pad surface to extend outwardly for painting an interior corner and inwardly for painting an exterior corner with equal ease.

This application is a continuation-in-part of application Ser. No. 07/752,061 filed on Aug. 29, 1991, now U.S. Pat. No. 5,267,369, issued on Dec. 7, 1993, Bruce C. Polzin, Robert A. Shaffer, Robert A. O'Neil, Robert A. Chieda, Leon C. Clouser

A paint pad is a flat, usually rectangular paint applicator. It has an easy-to-hold handle on the back, and the front is foam covered in short, densely-packed bristles.

Figure 2.6 Paint pad

Paint pads come in different sizes, so that you can pick the size that is most suitable for the painting job you need to do. There are different handle types available too, so you can choose the one that you feel most comfortable with.

You can buy replacement pads to fit onto the handle, so when the pad gets old and worn you can replace it.

Why Use a Paint Pad?

Paint pads are easy to use, provided you have the right equipment. Buy a pack that has a tray with a built-in roller. This enables you to make sure you get the right amount of paint on the pad.

Paint pads give good coverage and a smooth, even finish. They are much cleaner to use than rollers, as there is no spray. They do need reloading more often than rollers, but they still do the job quickly.

Because of the smooth finish they give, paint pads are particularly good for ceilings. Make sure you get one that you can attach a long handle to, to make the job even easier.

How to Use a Paint Pad

As with any painting job, make sure you have protected the floor and any furniture left in the room, and wear old clothes. Paint pads are less messy to use than rollers, but with any painting job there is a risk that some paint will somehow end up where it's not meant to be!

For the best results, use a specialist paint pad tray, which has a built-in roller. Even if you can't get a specialist tray, a normal paint tray will be better than nothing. Pour some paint into the tray, and draw the paint pad over the roller. This will transfer paint from the tray underneath onto the pad. If you are using a standard paint tray, dip the pad in the paint and wipe off the excess. Make sure the pad is evenly covered, otherwise you'll get a patchy finish.

Start painting in a corner of the room. Place the pad flat on the wall, and move it up and down gently. Use long strokes to spread the paint out well, and to stop your arm from getting too tired! Work in a section directly in front of you, to make sure the pad stays flat on the wall and the pressure stays even. Work your way across the wall, blending the edges as you go and refilling the pad frequently as needed.

When you've finished, wash the pad in warm soapy water and rinse well.

User Tip: Robert sent in this tip from his experiences using a paint pad

Paint pads end up getting paint on the surface of the area that they are trying to paint up to. Therefore if you set the ridged pad slightly away from the edge of the plastic frame and wipe it before you use it up against an adjacent painted wall, you should not get paint on that adjacent wall.

However, because you have left a slight gap between the ridges pad and the plastic frame, thereby not allowing the pad to meet the adjacent painted wall, there will be a thin line of unpainted wall where the pad part did not touch.

If you move the ridged pad flush with end of the plastic frame you will end up transferring unwanted paint onto the adjacent wall; better to cut in with a brush first and then use the paint pad.

2.3.5 Paint

The type of paint you choose is just as important as the color, and can have a major effect on the character of your room and the vibe you want to achieve. This is the type of paint and potentially prevent a time- and money-consuming mistake.

1. Water-Based Paints

The majority of wall paint sold today is water-based, primarily because of its ease of use. If your surface has been previously coated with an oil-based product, be cautious when switching to water-based paint as it may have trouble sticking. In this situation, Sherwin-Williams recommends washing the surface and then roughening it all over with a medium to smooth grit sandpaper—making it clean, dry, and dull in order to prevent peeling of the new coat.

For those instances when an oil-based paint would traditionally be preferable, but you desire a water-based product, a number of companies have introduced "waterborne enamels" or "waterborne alkyds." These paints look and behave much like oil-based options because they have good leveling qualities for a smooth finish.

Advantages of water-based paints :

i. Doesn't require a pre-treatment.
ii. No mildew growth.
iii. Low VOCs (low levels of toxic emissions).
iv. Easy cleanup with water.
v. Quick drying.
vi. An elastic, flexible finish resistant to cracking.
vii. Can be used on almost all surfaces.
viii. Stable color over time, doesn't yellow or fade in sunlight.

Figure 2.7 (i) Water based paint

2. Oil-Based Paints

Oil-based paint can be used on almost all surfaces, and is praised for its high durability and rich finish. Still, be cautious, as oil paint emits strong fumes that can be overwhelming, and the paint cannot be washed with water. If you choose oil paint, solvents like turpentine are necessary for washing brushes or other materials with unwanted paint on them.

Advantages of oil-based paints

i. Attractive gloss.
ii. Good for high-moisture rooms (ex. bathroom or kitchen).
iii. Longer dry time (good for making fixes).
iv. Good leveling (brush strokes fill themselves in to create a smooth finish).

Figure 2.7 (ii) Oil based paint

3. Paint Finishes

Sheen options vary by manufacturer, but share some common characteristics. As durability improves across all sheen levels with newer paints, many people are finding

creative ways to mix and match them. "We've noticed that customers are becoming more experimental in their use of paint finish, to create real impact and texture within a scheme," says Farrow & Ball Director Sarah Cole. "Try painting a stripe of full gloss on a matte wall in the same color to create a striking, textured look," she suggests.

Matte paint:

i. Is the least reflective sheen available.
ii. Has a velvety texture.
iii. Helps hides imperfections in walls and ceilings.
iv. Offers great depth of color.
v. Is generally considered the standard sheen for walls.
vi. Can sometimes be difficult to clean.

Figure 2.7 (iii) Matte paint

i. Eggshell and satin paint (satin is slightly glossier than eggshell):

a. Have some reflectivity.
b. Offer improved durability.
c. Are frequently used in demanding environments, like kitchens and bathrooms, where easy cleanup without a highly glossy finish is desired.

Figure 2.7 (iv) Eggshell and satin paint

ii. Semi-gloss and gloss paint

a. Great for kitchens, doors, window trim, accent walls, and bathrooms.

b. Are the most reflective sheens.

c. Are highly durable and stand up to multiple cleanings.

d. Are traditionally used on baseboards, moldings, and doors.

e. Can make a statement, but also highlight imperfections.

Figure 2.7 (v) Semi gloss and gloss paint

Sue Kim, color trend and forecast specialist at Valspar, recommends trying an accent wall with a gloss sheen, while painting the rest of a room matte. But at the end of the day, "It's all about how you want to set the atmosphere of your home," she says. "A

matte sheen gives you a calm and serene feeling, because of that textural element." On the other end of the spectrum, gloss adds energy and excitement. Remember that darker and richer colors have a naturally higher sheen (due to increased colorant), so you may want to consider a lower sheen when using a darker paint color.

As for eggshell and satin, Kim likes to use them in smaller spaces with little natural light. "I always say a satin finish is great in a powder room," she says. "It reflects the light to bring out the color." Eggshell is also great for covering wall imperfections, and is scuff resistant.

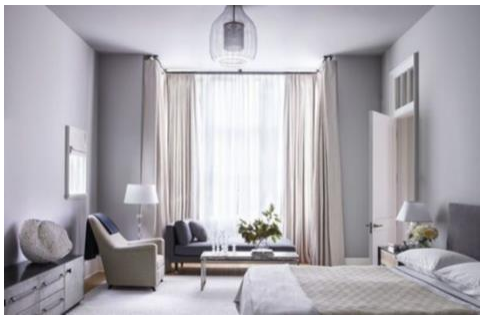


Figure 2.7 (vi) Satin finish paint

Finally, it is important to remember that the paint you choose is only as good as the quality of the tools you paint with. Although you may think rollers or brushes are a good place to save money, using high-quality tools will help you achieve the best look.

Different Types of Paints for Interior & Exterior Surfaces

Paints are normally manufactured and marketed by Multinational companies. They normally brand their paints with commercial brand names rather than technical names. Again, there are different types of paints available in the market. The verities of paints based on technical specifications as well as brand names marketed by company confuse the common man very much. One hardly understands the difference between oil paint or emulsion paint, oil paint or distemper paint, silicon paint and rubber paint. Similarly, velvet paint, which is a symbol of sheen or “Apcolite” and “Silk” which are symbol of the high quality brand also confuses the common man. We have discussed sheen and finishes in different articles. This is the different types of paints based on technical specifications, which will guide you to use the right paint at right time over the right surfaces.

1. Whitewash

Figure 2.7 (vii) Whitewash paint

Whitewash is a low-cost paint made from mixture of slaked lime or powdered chalk, size and water used for whitening walls (brick walls, concrete walls, other wall surfaces etc.), woodworks, etc. Sometimes pigments like fevicol are also added in it to make the colorful walls.

1. Oil Paint

Oil based paints are slow drying paints which consist of particles of pigment suspended in a drying oil or oil varnish as the basic vehicle ingredient. The commonly available oils are linseed oil, Tung oil, poppy oil, nut oil. Oil-based paints contain thinners like turpentine, naphtha, Methyl ethyl ketone, etc.

Oil-based paints are thicker and harder. They are also glossy and smoother. They are more durable and stain resistant. The fumes from the oil- based paint are the toxic material which is harmful for health and environment hence less popular choice now days for painting. They are less flexible as compared to emulsion paints and hence not suitable for exterior paints.

2. Cement Based Paint

Figure 2.7 (viii) Cement based paint

Cement-based paints are water based paint in which cement forms the base. Cement is the main constituent in cement based paints which is responsible for the hardness and durability of the painted surface. Cement paints do not require oil or other organic matter. Cement Paint can be applied on the exterior as well as interior walls. It is used for painting exterior wall surface mainly for preventing water penetration and reductions of dirt collection. It is suitable for coating concrete as well as decorating indoor and outdoor walls.

3. Enamel Paint

Figure 2.7 (ix) Enamel paint

Enamel paints are oil based paints and with a considerably glossy finish. Enamel Paints consists of white lead, zinc white, resinous matter and petroleum spirit. Enamel paints are more durable and have hard strong finish. Enamel paints provides excellent coverage and color retention. Enamel paints have hard, glossy and opaque finish. Enamel paints dry slowly or quickly depending on thinner used.

4. Aluminum Paint

Figure 2.7 (x) Aluminum paint

Aluminum paint is a coating material which is made by a mixture of oil varnish and aluminum pigment in the form of thin flakes which overlap in the paint film and which reflects the sun's radiation well and retains the heat in hot-air or hot-water pipes or tanks. The resin helps the paint to flow, and gives it strength and durability, while the aluminum flakes give the paint a shiny, metallic finish. This type of paint generally has a silvery finish, and many manufacturers only produce one shade of aluminum-based paint. They are used to paint a variety of materials, including metals, wood, and masonry.

2.3.6 Material that we used :

i. RS PRO A4 Stainless Steel Hex Nuts - Metric

Figure 2.8 Stainless steel hex nuts

RS PRO A4 stainless steel hex nuts ideal for use in chemical processing equipment and marine environments due to its higher resistance to tarnish and corrosion. These nuts are the most common hexagonal fastener that has internal threads that screw on to the shank of a bolt or a hex cap screw.

Features and Benefits:

1. Metric hex nuts
2. To DIN934
3. A4 grade 18/8 stainless steel (Type 316 S16) – long lasting
4. Good resistance to corrosion and saltwater

5. Due to the hexagon nut having six sides it makes it easier to work with and is very versatile
6. Easy to tighten and loosen
7. Accessible from 360 degrees due to their shape

1) Galvanized iron pipes

Figure 2.9 Galvanized iron pipes

Galvanized steel can be made into a strong plumbing or tubing material -- one that resists corrosion from exposure to water or the elements. It has been used used for water-supply pipes or as a strong tubing for outdoor applications. Galvanized pipe has been coated with a layer of zinc. The zinc provides a barrier against corrosion so that the pipe may be exposed to the outdoor environmental elements. The protective barrier proves equally effective against damage from indoor humidity. Galvanization is the process of

applying a protection zinc coating to steel or iron, to prevent rusting. The most common method is hot-dip galvanization, in which part are submerged in a bath of molten zinc. Galvanizing protects :

i. it forms a coating of corrosion - resistance zinc which prevents corrosive substances from reaching the more delicate metal. The zinc serves as a sacrificial anode so that even if the coating is scractched, the exposed steel will still be protected by the remaining zinc.
ii. These pipe are widely used for conveying raw water and distribution of treated water in majority of rural water supply schemes, where the requirements of water is less. Mostly medium quality GI pipes are used. These pipes are cheap, light in weight, easy to handle ,transport and easy to join.

2) woven pad

Figure 2.10 Woven pad

The pad is made of a woven material that gives you straight lines that are also perfectly smooth. On top of that, you can be sure that you'll have perfect trim around doors and windows, which is just what you're looking for with this type of tool.

Woven fabric is any textile formed by weaving. Woven fabrics are often created on a loom, and made of many threads woven on a warp and a weft. Technically, a woven fabric is any fabric made by interlacing two or more threads at right angles to one another. Finest blend of woven fabrics provides maximum protection against shedding.

3) Stainless Steel plate

Figure 2.11 Stainless Steel plate

This type of plate is a stainless steel plate is a widely used plate in the automotive industry as a vehicle bodybuilder and is also widely used as a household appliances.

Many of the advantages of stainless steel plate are one of them is having a high rust endurance. And many industrial manufacturers do combinations or finishing to increase or produce better stainless steel quality.

4) Clear Paper

Figure 2.12 Clear paper

Clear Paper is an interesting alternative to any other paper. Make your mailings truly stand out with clear, translucent paper. Whether you use it for marketing materials or for personal use (invitations, letters, greetings, etc), Clear Paper is sure to be unique!

Instead of letting your paper be the center of attention, your message will be the top priority. With Clear Paper that's basically all they'll see, so be sure to have a great copy

line for your marketing flyer, a genuine message for your holiday card, or a funny start to your letter. With this paper, you'll be sure to have some fun!

Clear Printer Paper is available in 8 1/2 x 11 (standard letter size) in a 17lb option and a 28lb option. Both options come in packs of 100 and both come in Clear Translucent Vellum.

Clear Paper is printer-friendly on laser printers. Inkjet printers may not work well so be sure to check your printer's capabilities

5) Rubber Handle

Figure 2.13 Rubber handle

Rubber, either natural or synthetic alternatives, is a weak conductor of heat and a good absorber of vibration. It also has a high friction coefficient, partly because its soft surface tries to shape itself for your grip but mainly by printing with ribs for extra grip.

So it is:

i. Feels warm to the touch as it minimizes the heat flow from your hands to the bar-handle heat conductive metal,
ii. Wring your hands from some of the road-shock and vibration.
iii. Helps you tie the handles (fine metal) correctly.

2.3 CHAPTER SUMMARY

Of course, a good study, is a result of good rules and regulations. Using the methods described above, researchers hope that this study will be able to follow its own unique standards and qualities. This literature review also aims to facilitate researchers to obtain information. It is such a guide to researchers in producing this study. In the researcher, we get this information as well, the researchers agree with the ethics of research that investigators must adhere to.

A literature review surveys books, scholarly articles, and any other sources relevant to a particular issue, area of research, or theory, and by so doing, provides a description, summary, and critical evaluation of these works in relation to the research problem being investigated. Literature reviews are designed to provide an overview of sources you have explored while researching a particular topic and to demonstrate to your readers how your research fits within a larger field of study.

A literature review may consist of simply a summary of key sources, but in the social sciences, a literature review usually has an organizational pattern and combines both summary and synthesis, often within specific conceptual categories. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a

reshuffling, of that information in a way that informs how you are planning to investigate a research problem. The analytical features of a literature review might:

i. Give a new interpretation of old material or combine new with old interpretations,
ii. Trace the intellectual progression of the field, including major debates,
iii. Depending on the situation, evaluate the sources and advise the reader on the most pertinent or relevant research, or
iv. Usually in the conclusion of a literature review, identify where gaps exist in how a problem has been researched to date.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

Research methodology is a method and technique of forming, collecting and analysis data so as to produce evidence that can support a study.

In particular, to study the effectiveness of a study on a project called "Perfect Angle Paint" (PAP). Its effectiveness is checked to ensure that the PAP is able to or not to paint in difficult angles such as inner edges and exterior walls, and part of the walls with window frames and ceilings. In addition, PAP jug is designed to shorten the process of painting. Hence, surveys need to be conducted to collect and analyze data so that the creation of the PAP can achieve the purpose of its creation.

To ensure that PAP works properly and can be used properly, it needs to be carefully crafted and should be testing from time to time. Methodology is also important in order to save on maintenance costs instead of replacing new ones. Not only that, more innovative designs make the PAP look more modern and reliable.

Therefore, this chapter will describe a methodological study which is a set of systematic methodology that is carried out to achieve the goals and questions of the study. To ensure that research findings are done well, a researcher should be able to plan his research using the appropriate designs of the study.

Therefore, this chapter will also discuss the overall assessment method. The use of appropriate methods determines the best results and research results and achieves the goals and objectives set. The aspects discussed include survey surveys, respondent selection and study sites, pioneer studies, information acquisition, data collection and data analysis procedures and formulas.

3.2 RESEARCH DESIGN

The collection of preliminary data is important as it will determine the work steps and objectives of the project. To ensure that this final project is moving in the right direction from the project supervisor, Puan Mariam binti Abdullah is very important as there are some things related to this final project should follow the correct procedures so as not to disturb any party and to get the reputation of polytechnics.

Readings and referrals, preliminary discussions and observations are conducted to understand the research and data associated with the project as well as to achieve the objectives and goals of the project. The outcome of the initial study will enable the process of identifying the relevance of the title taken with the findings of the project's objectives and also allowing the information and references that are relevant to the project's title and objectives.

Referrals have also been made through the website to obtain detailed preliminary information on the study, telephone calls are also being made to obtain information for designing the "Perfective Angle Paint" project.

Flow Chart of Perfective Angle Paint

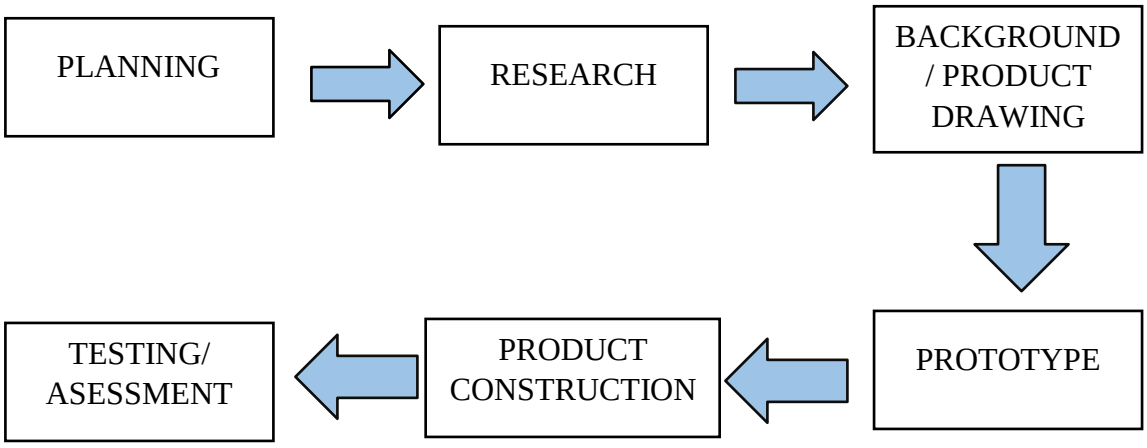


Figure 3.1 Flow chart PAP

3.3 DATA COLLECTION METHOD

According to Abdul Rashid Moten (Moten, 1988), no matter what method In use, an investigator is required to adhere to and follow the procedures so that the data obtained in such a way can help produce a valid, relevant and valued study according to the nature of the field the study. Neat design in the process of collecting data can also be helping researchers to manage time and research costs well.

According to Idris Awang (Awang, 2001), basically there are four methods of data collection often used in research2 namely interviews, questionnaires, observations and interviews experimental. However, experimental methods are rarely used in social research except in the field of education where a method.

Newly formed lessons will be experimented in the classroom to find out its effectiveness and weakness.

To carry out this study, data collection methods have been practiced to obtain the data that are essential for the analysis stage. Among the methods of data collection is the questionnaire. This is because using the questionnaire method is much younger as the form and the study can be disseminated among polytechnic students. Data collection can be classified into two types, primary data and secondary data.

3.3.1 Primary Data

Primary data is data derived from natural resources collected for answer the question. These data are collected by researchers through experimental processes or field surveys such as questionnaires, observations, interviews and so on. Perimeter data refers to a data source that is not available in a file or report. In the area of science research social, these data can be collected from individuals, focus groups or through expert panels.

Primary data collection can be done passively and actively.

The data collection process was carried out through the distribution of questionnaires to respondents. Methods of questionnaire distribution use the internet where respondents need to fill in the form provided on the internet.

3.3.2 Secondary Data

Secondary data can be referred to as data that has been collected by other researchers. For example, past or past data is collected for research purposes. The data is still appropriate and relevant to be used to answer questions of research or developed to new information or formulations for current studies.

Secondary data comprises literature studies and other sources such as thesis, books related to study field, local newspapers, journals and other publications related to research conducted. These materials are analyzed accordingly and become the basis of reference to this study.

3.4 RESEARCH INSTRUMENTS

In this research instrument, the questionnaire was chosen. Respondents' selection consists of residents of Polytechnic Sultan Salahuddin Abdul Aziz Shah students. Survey Monkey was used to complete the questionnaire.

PAGE 1

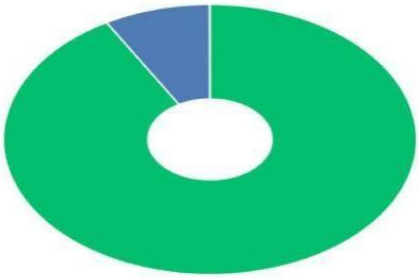
1. Jantina

Answered: 61 Skipped: 0

Lelaki	44.26%	27
Perempuan	55.74%	34

Figure 3.2 (i) Respondent's sex

2. Adakah anda mempunyai pengalaman mengecat ?



Answered: 60 Skipped: 1

Ya, pernah	91.67%	55
Tidak pernah	8.33%	5

Figure 3.2 (ii) Respondent's experience

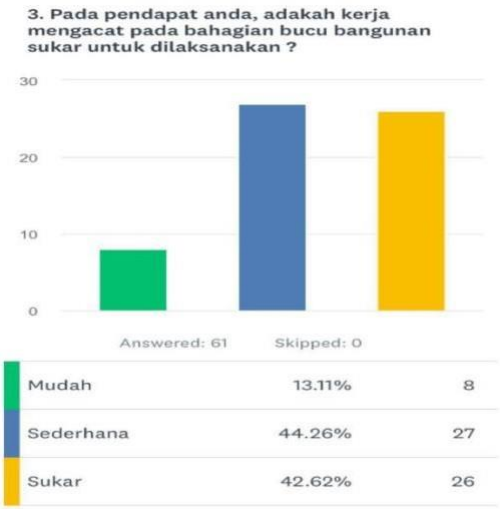


Figure 3.2 (iii) Respondent's opinion

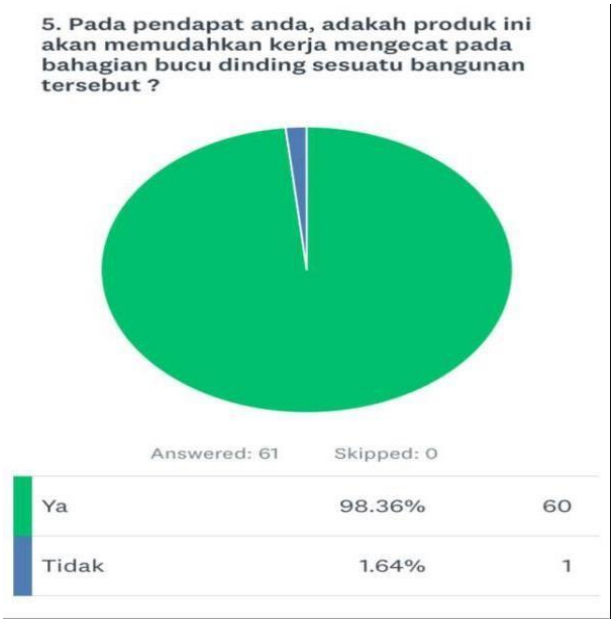


Figure 3.2 (iii)

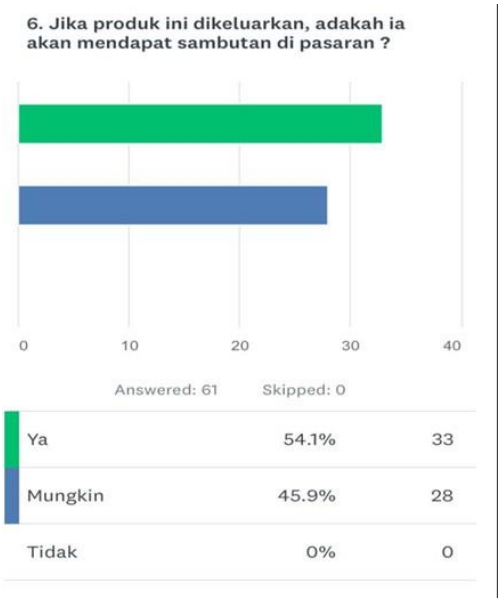


Figure 3.2 (iii)

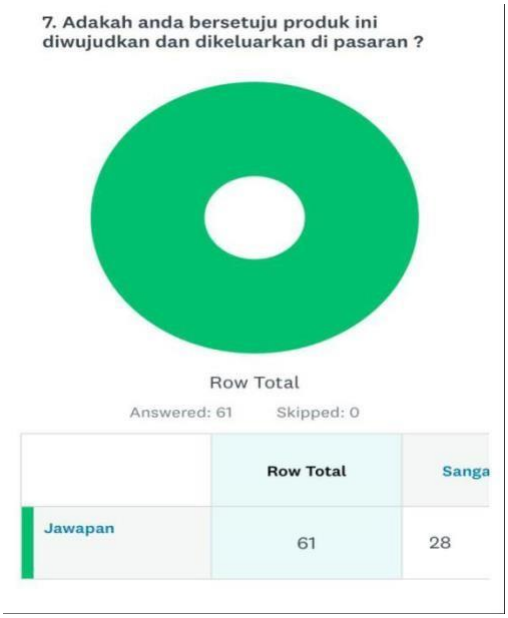


Figure 3.2 (iii)

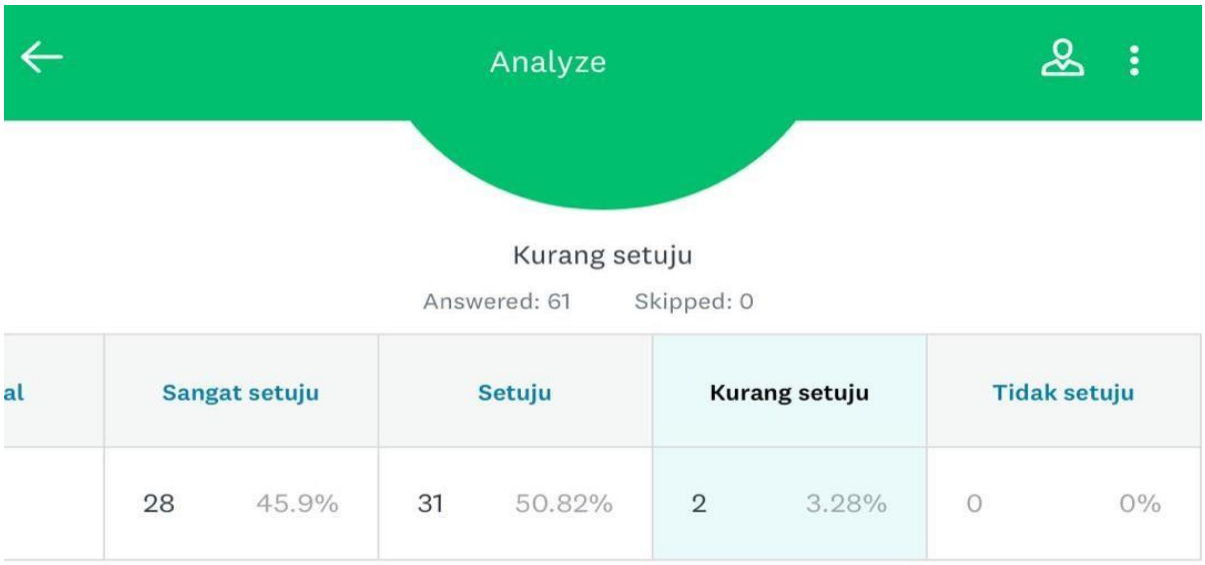


Figure 3.2 (iv) Analyze

3.5 SAMPLING TECHNIQUE

Definition of sampling: the process of selecting elements in the study population for the purpose of representing the population of a study.

According to Mohd Majid Konting (1998), the selected sample at least has the same characteristics as the population in the research.

The smallest sample size allowed for a measure is 30 respondents.

A good and perfect sampling process can help make generalization through the hypothesis testing of the study.

The sampling purpose is:

a) To minimize the cost of research.
b) To save time and energy researchers.
c) To get the maximum accuracy and expectation to occur in the research.

3.5.1 Sampling Methods

In a research, there are two methods of sampling:-

i. Probability sampling (random)
    a. Easy random
    b. Systematic random
    c. Random layered
    d. Group

ii. Sampling is not probability
    a. Accidental sampling
    b. Quota sampling
    c. Purposive sampling

3.5.2 Analysis Model

In doing this analysis model, mathematical model is used. It aims to facilitate data analysts. The applied mathematical model refers to a predictive model. Given the effectiveness and relevance of the model, the technique of recreation is used. It was able

to control the variability of variability with other variables of variability that were also tested in analysts.

The findings of this study will be presented using a pie chart, bar graph and table. Selection of the method is done because the assessment is easy to do and the results obtained are easy to understand.

3.6 DATA ANALYSIS METHOD

This chapter reports on the results of tests and tests the responses provided by the respondents to the questionnaire run. In this chapter, researchers also present the findings. Things that contained in this chapter is the subject and place of study, the instrument of study, the way analysis data and analysis findings. This chapter will describe the findings of the results of the collection of primary data on respondents' samples. The questionnaire on the online survey comprises studies related to the project that we run.

The primary data were collected using the survey method. The instrument is used is a questionnaire distributed through online to students several Departments in Shah Alam Polytechnic. Questionnaire contains two main functions namely the first, to collect information of respondents' demographic information such as gender, age, income and so forth and secondly, to obtain information in the form the measurement of the variable either individual or group.

3.6.1 Collection Methodology and Data Analysis

In the context of this study, questions for questionnaires were developed for measuring the level of acceptance of Polytechnic Sultan Salahuddin Abdul Aziz Shah students on existing Perfective Angle Paint. Questions are also being made to look at the perceptions and assessments of the students about existing PAP is be required or not.

To facilitate the measurement, Survey Monkey apps is used for viewing attitude tendency, perception and respondent's assessment of a statement. Respondents were asked whether they were, disagree, neutral, agreed or strongly agree with a given statement. To see ratings respondents to something, such as weak, weak, simple, good scale and very well used

3.7 CHAPTER SUMMARY

This chapter describes the research methodology used to collect and analyze the data required to address the research questions and to test the hypothesized relationships developed in this study. The chapter begins with a discussion of the research design, followed by the population from which data will be collected and the approach used in sample selection. The chapter then continues with descriptions of the questionnaire design, focusing on the mail survey. Finally, the choice methods odata measurement and scaling. Next, the discussion centres on data collection methods, f data analysis are discussed.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

This chapter will present the findings of the data based on an instrument that was used to collect data in the process of preparing this product. The methods used include questionnaires and interviews. This method is very important for identifying problems faced by users in painting tools on the corners of the walls and between walls with ceilings and existing window frames such as paint brushes. After identifying the problem, we were able to design a product that would meet the needs of our users.

The results obtained in this chapter are the results of the experiments and the questionnaire form. The data resulting from experiments analyzed in more detail to draw conclusions based on the objectives that have been set.

The study was conducted using 20 respondents from the general public and painters. There are several aspects that are the main focus:

1. Respondent demographics (gender and age).
2. General view of the study.
3. Respondents' perspectives on Perfective Angle Paint :
    i. Material used
    ii. Advantages
    iii. Cost
    iv. Security

4.2 DEMOGRAPHIC PROFILE OF RESPONDENTS

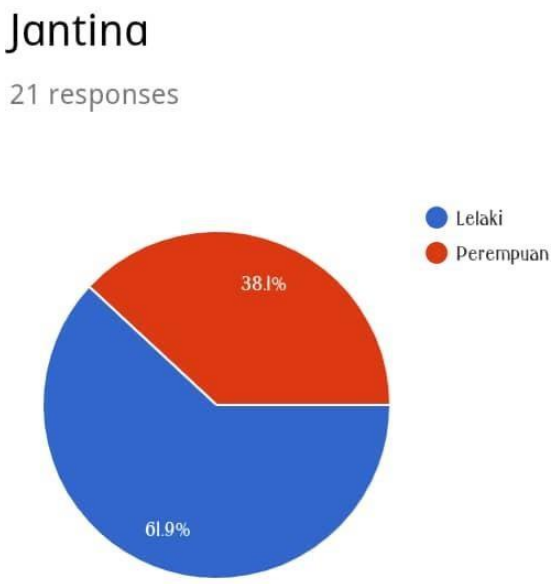


Figure 4.1 General response

Figure 4.1 shows the results of our survey, most respondents were composed of men which is about 13 respondents. Meanwhile, there were also 8 respondents from

women. The number of male respondents is higher because most of the painting work is done by men compared to women.

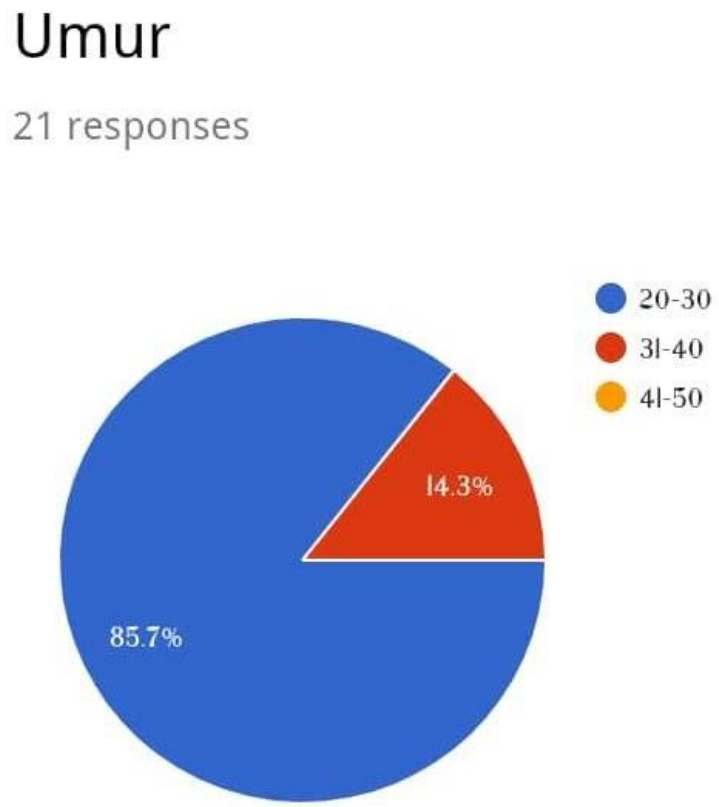


Figure 4.2 Age range of respondent

Based on the survey questionnaire, 18 respondents were 20 to 30 years old. Meanwhile, there are 3 people between the ages of 31 and 40.

4.3 RESEARCH FINDINGS

4.3.1 Experimental research data

The data obtained during the experiment will be evaluated in terms of product effectiveness. The data will be summarized in the form of a report. The data obtained will be used for improvement and for the safety of the product. This test will test the effectiveness of the product on the actual part of the wall such as the inner and outer corners, as well as the part between the wall and window frames and the interior part of the wall with the ceiling. This test is done by comparing common brush with Perfective Angle Paint.

Figure 4.3 Normal paint brush

Figure 4.4 Perfective Angle Paint

Product testing :

Time Test and Finishes Test Report	
Purpose	To make sure this Perfective Angle Paint is able to save time in the process of painting the parts instead of using a normal brush.
Ingredients	I. Normal paint brush. II. Perfective Angle Paint. III. Water based paint. IV. Paint container. V. Adhesive tape.
Procedure	The inner corner and the outer corner of the wall 1. Pour paint over the paint container. 2. Paint the inner corners and the outer corners of the walls using a normal paint brush. 3. Record time. 4. Paint the same part using Perfective Angle Paint. 5. Record time. The part between the wall and window frames and ceiling 1. Pour paint over the paint container. 2. Attach adhesive tape to window frames and ceiling. 3. Paint the inner corners and the outer corners of the walls

	using a normal paint brush. 4. Record time. 5. Paint the same part using Perfective Angle Paint. 6. Record time.
Observation	1. The process of painting using Perfective Angle Paint is faster than the normal paint brush. 2. The level of paint finishes using Perfective Angle Paint is much smoother than a normal paint brush.
Conclusion	This test shows that Perfective Angle Paint is more effective than regular paint brush.

Table 4.1 Report Test

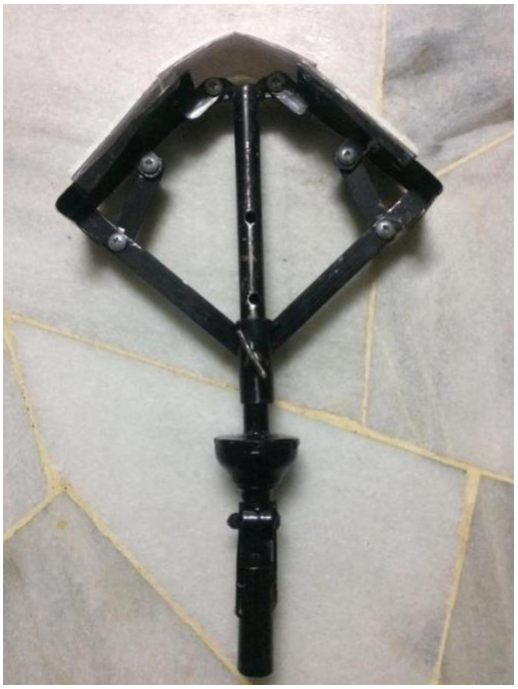


Figure 4.4 Perfective Angle Paint

4.3.2 Research questionnaire

To further strengthen this research, the questionnaire was carried out by involving the public and contractors. The data obtained will be analyzed. The following is information related to the survey conducted. Pre and post-questionnaires were performed to obtain accurate data.

Pre-Investigation

Be done before product is manufactured. The purpose of the pre-survey was to identify the weaknesses of the painting equipment in the difficult part of existing. In addition, the pre-form questionnaire was used to determine the difficulty painter to paint the corners that are difficult to be painted on the building.

Question Post

Performs after the product has been completed and tested. It aims to see how well the Perfective Angle Paint facilitate the work of painting and see the finishing paint in the corners that are difficult to be painted.

4.3.3 The data and pre-questionnaire summary

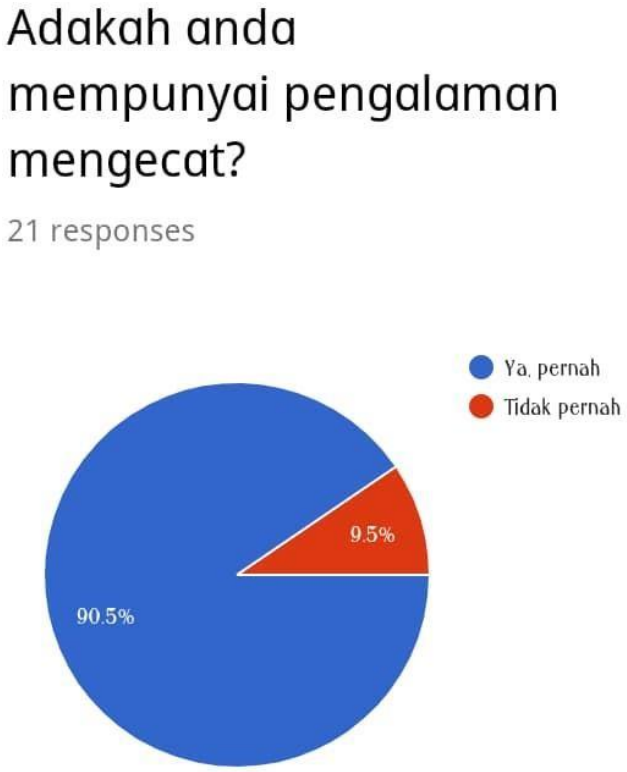


Figure 4.5 Painting experience

The pie chart 4.6 shows the percentage of respondents who are experienced in painting. The average respondents had a painting experience of 90.5%. Meanwhile, respondents who had no experience in painting were 9.5%. In general, we can assume that many painters have difficulty painting in difficult corners such as the inside and outside corners of a wall, as well as the part between the wall and window frames and ceilings.

Figure 4.6 Difficulty level for painting in difficult corner

The 4.7 pie chart shows the percentage of difficulty levels, there are 3 levels of difficulty to paint the corner, simple, medium and hard. The average respondents said that painting work in this difficult corner was not easy as only 9.5% of respondents said painting work in that area was easy.

4.3.4 The data and post-questionnaire summary

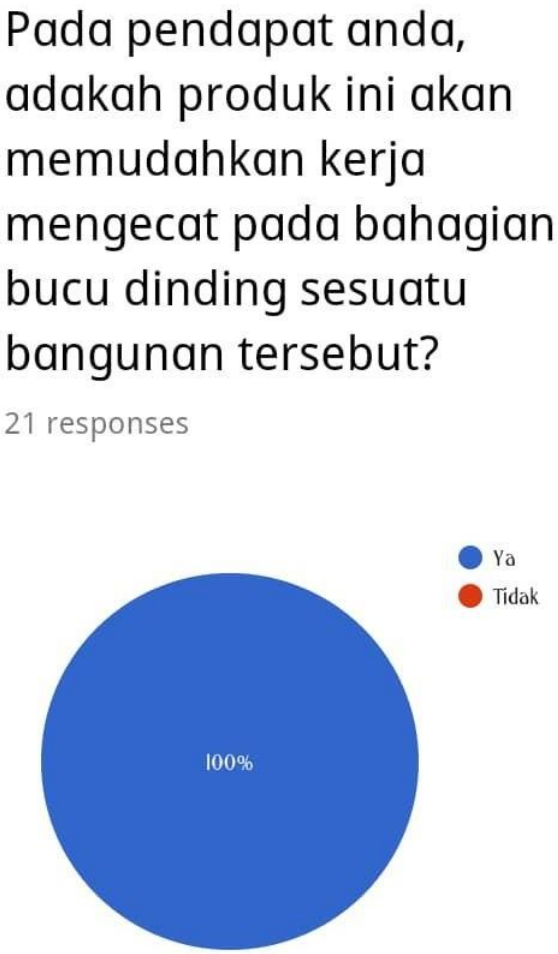


Figure 4.7 Effectiveness of Perfective Angle Paint

As a result of our survey of respondents based on a little explanation and description of the function of Perfective Angle Paint, all the respondents agreed that Perfective Angle Paint will certainly facilitate the process of painting especially in the difficult corner.

Figure 4.8 Time saving process of painting

Based on our survey of respondents based on a little explanation and description of the function of Perfective Angle Paint, respondents said that this Perfective Angle Paint can speed up the process of painting especially in difficult areas because no respondent said no.

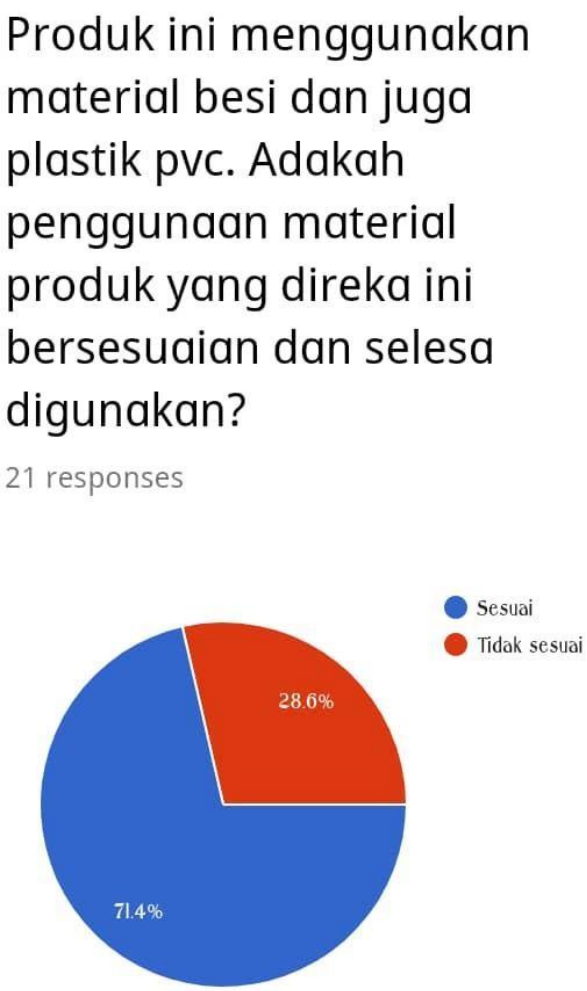


Figure 4.9 Material suitability

As a result of our survey of respondents based on a small description and description of the materials used in the manufacture of Perfective Angle Paint, the most average respondent agreed with the material that we have used. However, there are some respondents who disagree with the material we use and they have suggested the material more appropriate for us to use. We will consider these suggestions to ensure the effectiveness of Perfective Angle Paint is at the highest level of satisfaction for our product users.

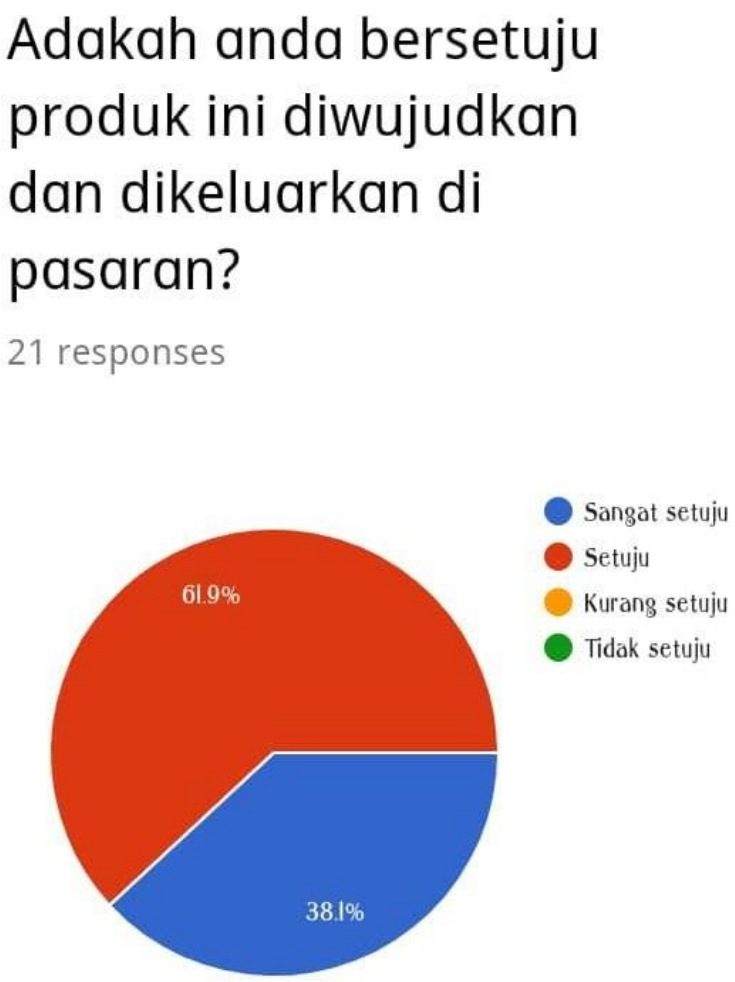


Figure 4.10 Product marketing response

The results of our survey of respondents based on a description of the commercial value of Perfective Angle Paint in the market, all respondents agreed and in fact some respondents strongly agree that Perfective Angle Paint is marketed as it has solved many of the issues encountered when painting in the corner is difficult.

4.4 CHAPTER SUMMARY

The questionnaire distributed to the users is to know the general opinion of the study conducted. From the results obtained, it is known that: -

i. Most respondents find it difficult to paint in a difficult corner when using a regular paint brush.

ii. The results of this survey also show that all respondents agree that Perfective Angle Paint is marketed.

CHAPTER 5

DISCUSSION, CONCLUSION AND SUGGESTION

5.1 INTRODUCTION

This chapter will describes the finished product in the required time frame. In addition, this product created can be produced perfectly and according to the requirements and to achieve the desired objective. Then the resulting product has undergone a number of tests to obtain data required to undergo such tests on either tested alone or used by others. The findings of the data obtained can be used as evidence that the resulting product can help and give advantages to the users. In addition, there are some advantages and disadvantages of the product to be improved after undergoing some tests. Therefore, there are some suggestions that have been made to improve the product in the future in order to provide benefits to consumers.

5.2 DISCUSSION

This "Perfective Angle Paint" (PAP) project is a product that is used to paint on hard-painted corners. This product is specially designed for painting the walls in the hard part, such as the corners of walls (90º), the outer edge of the wall (90º), part of the wall with the window frame (180º) and part of the wall to the ceiling (180º). This product is designed for use by skilled painters to paint the house whether or not skilled. This product has been tested by experienced painters painting. Next, we have also conducted their own tests on the PAP and PAP results achieved every scope of study for this product.

The following is a discussion of the results of the findings and issues that arise during the study was conducted. Next, respondents were given by experts about the difficulty of painting this painting using PAP. In addition, data retrieval can be conducted to identify emerging problems and how solutions can be discussed. Discussions have been conducted jointly with the supervisor Mariam Binti Abdullah has made it easier to achieve the objectives of our research product 'Perfective Angle Paint'.

The design of 'Perfective Angle Paint' is based on an in-depth study that we have done. The materials we choose to produce these products were selected after a study and comparison and some experimentation. The materials selected for this region contribute to our project is the best that we get to meet two aspects, namely lightweight and durable. With this, we are very confident with the use of a 'Perfective Angle Paint' could help painters to painting at the corners that are difficult to easy way.

Each team member has their job and are complementary to each other for the success of this project. The existing knowledge is also shared so that all members of the group are knowledgeable and able to learn a little more about the product being developed. Overall, the commitment and cooperation is essential to carry out any task that has been given.

5.3 CONCLUSION

Based on analysis of data obtained from questionnaires can we conclude that product 'Perfective Angle Paint' is aptly used by painters to painting in the difficult corner of the wall. The data is analyzed to provide some benefits to products that have been created.

Based on the analysis of questionnaires before 'Perfective Angle Paint' is produced, the majority of respondents agree that conventional painting methods is difficult because it requires two or more work and takes a relatively long time because the process of painting the walls is divided edges. So, it difficult for painters to perform the steps usually done by painters to painting the corners are difficult. In addition, respondents also agreed that this product will help the process of painting the corners are difficult will be faster.

However, there are many problems that exits during this project but we can handle it well. The tolerance and cooperation shown by each member of the group is a major factor in the success of this project. Hopefully with this product caused it can help painters do the job of painting the paint with ease.

5.4 SUGGESTION

Within a given time frame, we successfully completed the project. This product can operate as planned and achieve the objectives as desired and the product has been successfully tested. While this product works, it is a great satisfaction to every respondent who has used this 'Perfective Angle Paint' product. In producing this product, we hope that it will help the painters doing work of painting at the corners of the walls. Some suggestions we have made to improve the quality of this product.

Generally this product is the result of a planned innovation and achieve the objectives set. We also hope that future students can make more improvements to the product so that it can be a great product and can solve many problems. Some suggestions have been made to improve the quality of the project. These are:

1. Use lighter materials such as pvc.
2. Make PAP more safety.

5.5 CHAPTER SUMMARY

At the end of chapter 5, we are very proud of what we have accomplished to build a quality and useful product for the people. Finishing a quality product is a great test for us. The project has been going well for 7 months. We find that teamwork is very important for us to do something. Discussions between members of the group should be held regularly so that each member of the group can throw ideas to improve our project.

In addition, our products can help the painter to paint in a difficult corner. There are several advantages of our products as a result, it can reduce the cost of purchasing the excess brush, can save time to paint in a difficult corners and can also produce neatness using the PAP. We are very happy to have created this 3 in 1 product as well as an attractive design.

In addition, sacrifices in terms of time and money are also needed to make this project a success. We can also learn a lot of mistakes during the completion of this project in terms of presentation, report writing and include the information related to the data. Patience is important when doing this project because mungkinakan misunderstanding between members of the group or the occurrence of errors during the completion of the project. Finally, we can gain new experiences during this project and it does help us get used to working under pressure in the future

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APPENDIX

APPENDIX 1	Feedback Form
APPENDIX 2	Grantt Chart
APPENDIX 3	Receipt

APPENDIX 1

PERFECTIVE ANGLE PAINT

Perfective Angle Paint (PAP) adalah alat mengecat yang direka khas untuk mengecat bahagian bucu dinding seperti di sudut bucu dalam dan luar 90 darjah, bahagian antara dinding dengan bingkai tingkap dan bahagian antara dinding dengan siling 180 darjah. PAP juga dilengkapi dengan tiga bentuk yang mudah diubah.

* Required

PAP untuk sudut 180

PAP untuk sudut 90 (bucu luar)

1 Jantina *

- Lelak
- Perempua

2. **Umur** *

Mark only one oval.

- 20-30
- 31-40
- 41-50

3. **Adakah anda mempunyai pengalaman mengecat?**

Mark only one oval.

- Ya, pernah
- Tidak pernah

4. **Pada pendapat anda, adakah kerja mengecat pada bahagian bucu bangunan sukar untuk dilaksanakan?** *

Mark only one oval.

- Mudah
- Sederhana
- Sukar

5. **Adakah dengan penciptaan berus cat sudut PAP ini dapat mempercepatkan masa mengecat pada bahagian bucu dinding?** *

Mark only one oval.

- Ya
- Tidak
- Mungkin

6. **Pada pendapat anda, adakah produk ini akan memudahkan kerja mengecat pada bahagian bucu dinding sesuatu bangunan tersebut?** *

Mark only one oval.

- Ya
- Tidak

7. **Produk ini menggunakan material besi dan juga plastik pvc. Adakah penggunaan material produk yang direka ini bersesuaian dan selesa digunakan?** *

Mark only one oval.

- Sesuai
- Tidak sesuai

8. **Jika produk ini dikeluarkan, adakah ia akan mendapat sambutan di pasaran?** *

Mark only one oval.

- Ya
- Tidak
- Mungkin

9. **Adakah anda bersetuju produk ini diwujudkan dan dikeluarkan di pasaran?** *

Mark only one oval.

- ◯ Sangat setuju
- ◯ Setuju
- ◯ Kurang setuju
- ◯ Tidak setuju

10. **Cadangan untuk penambahbaikan bagi produk ini** *

_____

_____

_____

_____

_____

APPENDIX 3


Maybank
CHIN CHUN HARDWARE
LOT 2793,
JLN SUNGAI BULOH, KAMPUNG SUBANG,
SHAH ALAM
DATE : 23/07/19 TIME : 15:38:10
BTH NO: 000252 TRXN #: 007758
MID : 000027031501182 TID : 14089765
SALE
**********2572
ENTRY : CHIP
CARD TYPE: MyDebit
APPR CODE 153828
RREF NUM : 00252100727O
ACCT TYPE: Default
ARQC : FDA81D888C9789C3
TVR : 8000048000
APP NAME : MyDebit
APP ID : A0000000150001
TOTAL RM 37.60
PIN Verified
I agree to pay the above total amount
according to the card issuer agreement
CARDHOLDER COPY

PERNIAGAAN RIANG.RIA
NO,8 JALAN OPERA 2/B,
TTDI JAYA,40150 SHAH ALAM,SELANGOR
GST:-001662431232 TAX INVOICE

HHLTL-16 16# GARDEN
9555519500479 1 X 6.60 6.60
S
3 S THAILAND SCOURIN
9555384300181 2 X 3.85 7.70
S

Qtys: 3 No. Items: 2

RM 0.00
RM 0.00

TOTAL RM 14.30
CASH RM 20.30

CHANGE RM 6.00

THANK YOU FOR SHOPPING
GOOD SOLD ARE NOT REFUNDABLE

Wednesday, 09-01-2019 Time : 20:06
Cashier : AH SOO TTDI

LEO HARDWARE TRADING
SA0002310-X
No.4,Ground Floor,
Jalan Saujana Indah 1,
Taman Industri Saujana Indah
40150 Shah Alam, Selangor
Tel: 016-261 1254, 013-6682610 Fax: 03-7847 5106
Cust_Name: WALK IN CUSTOMER

Bill No : POS/96333
Date : 19/09/19 12:09:22 PM
Cashier : admin
Payment : Cash

Item	Qty	Price	Amount
SKK AF 1Lt 13268	1	14.00	14.00
Brush Nylon 21/2" 061718868022	1	4.50	4.50

Net Amt: 18.50
Received 18.50
Change : 0.00
Round Adj. : 0.00

GOODS SOLD ARE NOT RETURNABLE
THANK YOU
PLEASE COME AGAIN