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THE PROCESS OF REPAIRING FLAGPOLES AND MATHEMATICAL MODELING OF WALL PAINT DRYING

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Abstract

The repair of the flagpole's place aims to beautify the garden on the roadside of Dusun Mredo, RT: 04, Bangunharjo, Sewon, Bantul, Daerah Istimewa Yogyakarta. Repair of this flagpole requires special skills so that the results are good. In the drying process of painting the wall surface, the Moisture Ratio formula is obtained $MR = 1 - \frac{1}{67}t$, with ambient temperature 24 °C.

Keywords: Ambient Temperature; Location of Flagpoles; Moisture Ratio; Wall Surface Painting.

1. INTRODUCTION

The place for the flagpole is the place for planting the Red and White flag. In August the Red and White flag is always installed at this flag pole. The Red and White flag is installed to commemorate the Independence Day of the Republic of Indonesia. Wall painting aims to beautify the appearance of the walls. Wall painting, so that the results are good, go through a process of at least two or three times of painting. This modeling is to determine the length of the wall paint drying process. With this modeling can measure the drying time of wall paint. This modeling uses linear equations.

2. THE PROCESS OF REPAIRING THE PLACE OF THE FLAG

Repairs to the flagpole area require cement and sand that has been applied “irig”. The irig process is the separation between rock and sand. The tools for repairing flagpoles are tweezers, jidar, Roskam and brushes. The process of repairing the place where the flagpole is as follows.
(1) We mix cement and sand with a ratio of 1: 5.
(2) We mix the sand and cement mixture with water so that it sticks to the wall.
(3) We attach a mixture of cement and sand with a trowel, jidar and roskam to the wall.
(4) We wait for it to dry, at least one day.
(5) We "aci" the wall with a mixture of cement and water. Aci's goal is to smooth the wall.
(6) We brush the finished walls.

Figure 1. Location of the Flagpole Before being Repaired

Figure 2. Location of the Flagpole After Repair

3. THE PROCESS OF PAINTING THE PLACE OF THE FLAG

This wall painting aims to beautify the appearance of the wall. The material used in painting the walls is Lenkote Supersilk Anti Stain, while the tools used are Eterna brand paint brush, Wanly brand paint brush, and Taiyo brand aluminum oxide. The process of painting the flagpole as follows.

(1) For new wall surfaces, we make sure the walls are dry before painting. We do the painting if the wall is already dry.

(2) For old surfaces, we use cotton wool and sandpaper to clean the whitewashed walls. If the wall chalk is clean, we do the wall painting.

Figure 3. Wall Paint Materials

Figure 4. Place the Flagpole After Painting the Wall

3. MATHEMATIC MODELING OF WALL PAINTING DRYING

This mathematical modeling of wall paint drying refers to the papers of Sugiyanto (2020) and Sugiyanto (2022). Mathematical modeling using linear equations. Moisture ratio is the ratio of moisture content over time t, where t_0 initial water content.

The process of painting the wall surface is done in the morning in the tropics and it's not raining. At the time of painting the walls the ambient temperature was 24 °C. The process from satisfying to completely dry is 67 minutes. We can say that at the time $t_0 = 0$ minutes, Moisture Ratio value, $MR = 100\% = 1$, and on time $t_1 = 67$ menit, nilai Moisture Ratio, $MR = 0$. We can write

$$(t_0, MR_0) = (0,1)$$
$$(t_1, MR_1) = (67,0)$$

We obtain a linear equation

$$MR = 1 - \frac{1}{67}t$$

We gain $MR = 1 - \frac{1}{67}t$. The Moisture Ratio formula in general for drying wall surface painting is $MR = 1 + at$, where a depending on the ambient temperature. Figure 4 is a wall painting Moisture Ratio curve against time.

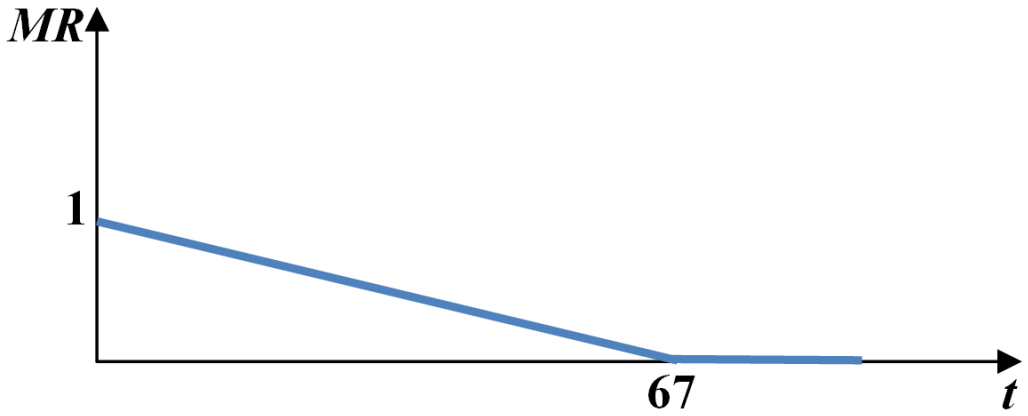

Figure 4. Moisture Ratio Curve for the Drying Process of Painting the Wall Surface Against Time

The Moisture Ratio formula in the drying process of painting the wall surface is

$$MR = \begin{cases} 1 - \frac{1}{67}t, & 0 \leq t \leq 67 \\ 0, & t > 67 \end{cases}.$$

4. CONCLUSION

Repairing the place where the flagpole is placed requires materials such as cement and sand that have been irrigated, while the tools needed are trowels, jidar, Roskam and brushes. Repair of this flagpole requires a craftsman with special skills so that the results are good.

The process of painting the surface of the wall is a coating that is applied to the wall. The Moisture Ratio formula obtained from the wall painting process is $MR = 1 + at$, where a depending on the ambient temperature.

4. REFERENCES

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