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IRON PAINTING PROCESS AND MATHEMATIC MODELING OF IRON PAINTING DRYING

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Abstract

Iron painting aims to make the object to be painted look attractive and extend the life of the iron from corrosion. In the process of drying iron painting using the Moisture Ratio formula $MR = 1 - \frac{1}{5}t$, with ambient temperature 25°C.

Keywords: Iron Painting, Moisture Ratio, Corrosion, Ambient Temperature.

1. INTRODUCTION

Painting is a coating process with the aim of beautifying and prolonging the process of destroying the material to be painted. Corrosion is the process of destroying metals, especially iron, due to the reaction of metals with the environment, thus forming unwanted compounds. Iron painting is a coating of iron in order to reduce the rusting process and beautify to look at. The choice of iron paint affects the corrosion time process.

2. IRON PAINTING PROCESS

The iron painting process uses Isamu paint, Tika 2-inch brush, Tri Ring thinner, and New Dell And iron brush. The object to be painted is a stove made of iron. The iron painting process is as follows.

1. We clean the stove object with iron content.
2. We mix paint with thinner in a ratio of 10: 1.
3. We thoroughly mix the paint and thinner on the stove.
4. We wait for it to dry, about 10 minutes.
5. We paint the stove again, we wait 10 minutes and it's done.

Figure 1. Iron Painting Materials

Figure 2. Stove that has not been painted

Figure 3. Stove After Paint

3. MATHEMATIC MODELING OF IRON PAINTING DRYING

This mathematical modeling refers to Sugiyanto (2020) and Sugiyanto (2022). In the iron painting drying process, we assume the Moisture Ratio value is $MR = 1 + at$. The iron painting drying process is carried out at ambient temperature 25°C. Iron painting dry takes 5 minutes. Moisture Ratio Value, $MR = 1$ at time $t = 5$ minutes and $MR = 0$ at 0 minutes. We can write

$$(t_0, MR_0) = (0,1)$$
$$(t_1, MR_1) = (5,0)$$

We obtain a linear equation

$$MR = 1 - \frac{1}{5}t$$

we gain $MR = 1 - \frac{1}{5}t$. The Moisture Ratio formula in general for iron painting drying is $MR = 1 + at$, where a depending on the ambient temperature. Figure 4 is the Moisture Ratio curve against time.

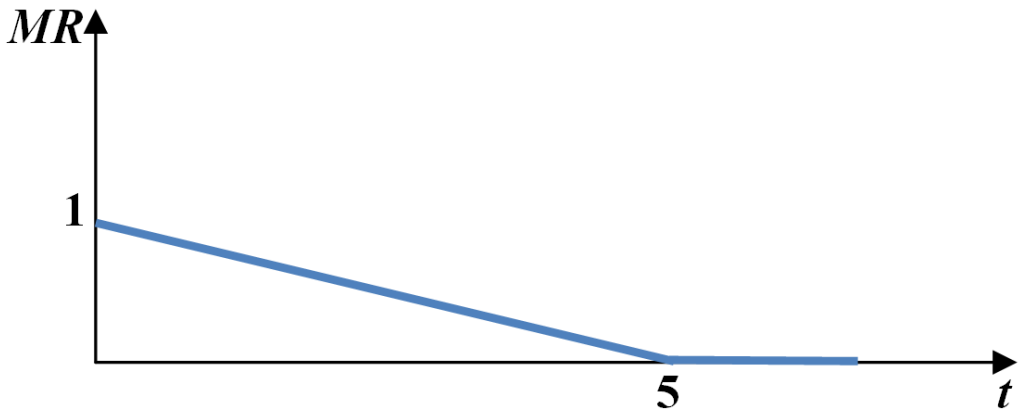

Figure 4. Moisture Ratio curve of iron painting drying process against time

The Moisture Ratio formula in the iron painting drying process is

$$MR = \begin{cases} 1 - \frac{1}{5}t, & 0 \leq t \leq 5 \\ 0, & t > 5 \end{cases}.$$

4. CONCLUSION

Iron painting is an iron coating to make it look good to look at. The Moisture Ratio formula in the iron painting drying process is

$$MR = \begin{cases} 1 - \frac{1}{5}t, & 0 \leq t \leq 5 \\ 0, & t > 5 \end{cases}.$$

5. REFERENCES

Sugiyanto, S. (2020). Melamine Processing and Mathematical Modelling of Melamine Drying in Wood. Kaunia: Integration and Interconnection Islam and Science, 16(1), 9-11.

Sugiyanto, S. (2022). Polishing Process and Mathematical Modeling of Polishing Drying on Wood, Proceeding International Conference on Religion, Science & Education (ICRSE) 2021, http://sunankalijaga.org/prosiding/index.php/icrse/article/view/827/789