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Manufacturing Process For Composite Reinforce Waste Lathe With Standard ASTM D 638-III

Iswandi Idris[a*], Ruri Aditya Sari[a], Hendriko[b], Hendri Novia Syamsir[c]

[a]*Industrial Engineering, Politeknik LP3I Medan, Medan – Indonesia*
[b]*Mechatronics Engineering, Politeknik Caltex Riau, Rumbai - Riau, Indonesia*
[c]*Electrical Engineering, Politeknik Caltex Riau, Rumbai - Riau, Indonesia*

Abstract

The composite is a mixture and bonded two materials on a macroscopic scale, but At the time of specimen formation, possible air being trapped in the sum layer or occurs due to mineral decomposition formed due to weather changes that produce holes or total bubble, so techniques and methods need to make composite specimens with minimal bubble, let alone composite waste lathe must get good composition so that it tested mechanically. This research focuses in the manufacture of good composite reinforcing waste lathe with ASTM D 638 – 03 standard.

Key-word: - manufacturing, Composite, waste lathe, ASTM D 638- III

Introduction

At the time of the sample, possible air trapped in the sum layer or occurs due to decomposition of minerals that formed due to weather changes, hole or bubble formed in the granular sum (pour) so that required techniques and methods to create composite specimens with bubble is minimal. expect for possible defective specimen or to get a good specimen during the course of the study, the specimen plus measure with varying specimens of the composite percentage mixture to metal waste of the lathe to get a suitable composition when a mechanical test performed. Although develop composite metal waste lathe manufacturers have been widely used and known by the name is TheOrgonite, but there is no scientifically acceptable research for this product. Composites are material systems composing of two or more materials (mixed and bonded) on a macroscopic scale (Efunda, 2016). Polyester resins are the most widely used resins in various applications using thermostat resins, either separately or in the form of a composite material. Although mechanically, the mechanical properties possessed by polyester are not very good or only moderate. This is because the resin is easy to get, the price is relatively affordable and most importantly is easy in the process of its fabrication. In industrial development, materials that have special properties such as metals required. Polymer composite material is one of the alternative material of metal substitute which has many advantages, such as having good mechanical properties, having lower density, not easy corrosion, easy to get raw material, relatively cheap price, heat insulation and sound, and used as a good electrical inhibitor (Widodo, 2008).

Methodology

Literature study method

Library research includes books, journals, proceedings, magazines, the Internet and various articles relevant to the material.

Experiment

Conducting direct research into composite metal waste metal lathe manufacturers

Tools used include:

1. Digital scales,
   These scales used to measure the weight of the components of the specimen
2. Prints
   For observation of mechanical properties' data, the specimen size adjusted to ASTM D 638 type III standard with dimensions as shown below

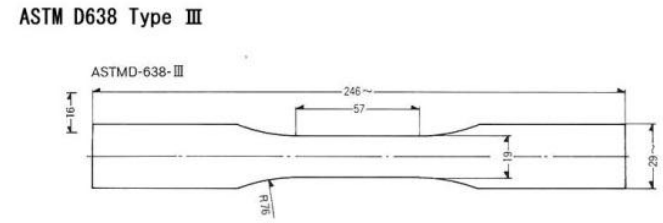

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Figure 1 ASTM D 638 -3 standard prints

Materials used include:

1. Metal waste lathe machine
   The waste fibre lathe material is basically spiral so that polyester can enter on the sidelines of fibre material so that it used as a composite matrix amplifier.

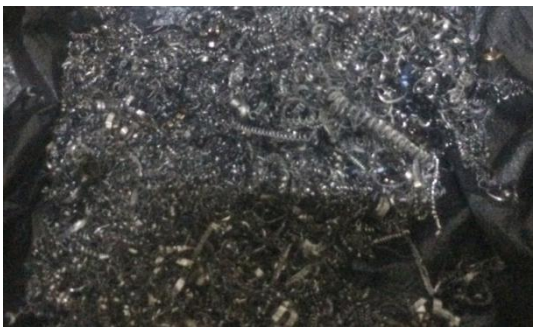

Figure 2 Metal Waste Lathe

2. Polyester resin, hardened matrix - catalyst (hardened)

Figure 3 resin and catalyst

3. Waxing
   Polishing wax works to ease the mould opened so that the specimen does not stick to the mould.

Figure 4 waxing

4. Styrofoam

Figure 5 Styrofoam waste

5. Aceton
   Acetone used to dilute fibre glass resin, clean glass glassware, and dissolve epoxy resins and super glue before hardening.

3. Results and Discussion

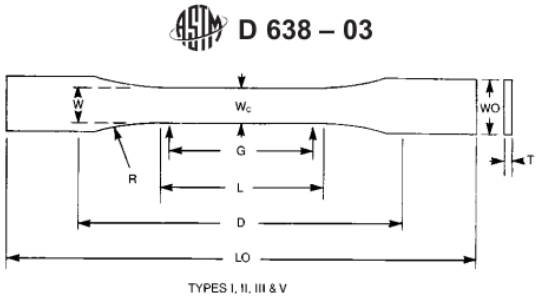

Figure 6 specimen ASTM D 638 - 03

Due to the iron waste of the lathes there the thickness made 30 mm, and still in the standard criteria of ASTM D 638-03.

Making moulding

Figure 7 Composite moulding process according to ASTM Standard D 638 -III

Figure 8 Finishing process Composite moulds are according ASTM Standard D 638 - III

Specimen Printing step

Figure 9 waste lathe weight

Figure 10 Polyester resin weighed

Figure 11 addition of hardened

The polyester resin mixed with the catalyst for fastening the hardening process. The catalyst used is 1% of the amount of polyester resin used.

Figure 12 lubricating the lubrication so that the mould wall is not sticky with the specimen

Wax moulding on the mould to ease the release of the specimen from the mould after the drying process.

Figure 13 preparation of waste lathe in the mould

Figure 14 pouring of polyester + hardened into moulding

Pour the resin mixture slowly from the dosage into the mould to prevent the bubble, after the metal waste of the lathe arranged in the mould, until the sink and the resin meet all the mould, then the mould closed. Drying process done until it is really dry that is 5 - 10 hours and if still not really dry then drying process can done longer. The composite drawing process of the mould with a knife or cutter tool. Composite test pieces are ready to specimens of specimens. Here's a picture of a Composite waste metal lathes by using a polyester resin matrix.

Figure 15 results in a composite mould

4. Conclusion

Manufacturing industries that must materials that have special properties can use a reinforced composite metal waste lathe which the manufacturing process is very easy with a relatively low-cost although having to use ASTM D 638-03 standard there is no significant problem.

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