

Review of: "Analytical Study and Amelioration of Plastic Pavement Material Quality"

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Potential competing interests: No potential competing interests to declare.

The research topic is quite interesting. Major revision is required before publication. Please find comments below:

In the Abstract section:

- The authors fail to indicate to which sample corresponds a strength of 27.6 MPa, nor what kind of strength was measured, presumably compressive strength.

In the Materials and Method section:

Waste plastics as binding elements

- The melting temperature reported for polyethylene terephthalate (113°C - 135°C) is quite low. It should be much higher in the range between 245°C and 265°C.
- The chemical symbol for polyethylene terephthalate is mistaken.
- The melting temperature reported for polypropylene varies from 130°C to 175°C; however, the density varies between 0.90 and 0.91 g/cm³. For such a variation in melting temperature, I would expect a larger variation in densities.
- Polyethylene terephthalate must be dried before melt processing because of its hydrophilic nature.

Preparation of the specimens

- In this phrase, "The effect of combining these two plastics was also evaluated by combining the two different types of plastics in the ratios 1:2:7, 1.5:1.5:7, and 2:1:7," the authors do not specify which proportion corresponds to polyethylene terephthalate, polypropylene, and sand.
- It is mentioned that the crushed plastics were melted in a chamber at a temperature of about 168°C, which is a lower temperature than the normal processing temperature for polypropylene (230°C - 270°C) and for polyethylene terephthalate (280°C - 320°C). Therefore, complete melting of the plastics as well as intimate mixing are not achieved.

Laboratory testing method

- The first paragraph should be eliminated or rewritten. There is no correspondence between the order in which the properties are presented and the standard that is mentioned.

Measurement of porosity and bulk density

- The temperature at which immersion in water takes place should be mentioned.

Compressive strength

- It should be mentioned what the meaning of 2 and 7 days is.
- The specifications of the equipment and conditions used for the measurements should be mentioned in the text.

In the Results section:

Compressive test

- Again, it must be mentioned what kind of treatment is referred to 7 days.
- In figure 6, the values shown for compressive strength are not accompanied by the units.
- The results that are presented in figures 6, 7, 8, and 9 must be accompanied by error bars.
- In figure 6, polypropylene is named 'pp,' whereas polyethylene terephthalate is named 'PET. There should be consistency in the way both plastics are addressed.
- The authors fail to explain the results shown in figures 6, 7, 8, and 9 in terms of the different plastics (polypropylene and polyethylene terephthalate) that are used.

Porosity and Water Absorption Test Results

- In this section, only the results obtained after immersion for 7 days are presented; however, in the Materials and Methods section, it is mentioned that samples are immersed in water between 3 and 7 days.