



IMPACT OF DIFFERENT KINDS OF GRASS FIBRE ON THE MECHANICAL PROPERTIES OF POTATO TILES

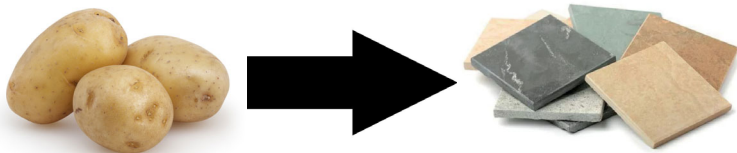
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Introduction

In this research project, the mechanical properties were tested of tiles made from potato snippets and the impact certain grass fibres would have on them.

Firstly, there was experimented on how to optimally develop the tiles, once this was found to be as optimal as possible in the given timeframe production started and different types of grass fibre were added.

Once the tiles were developed, tests could be performed on their mechanical properties (shear strength, compressive strength etc.) to determine for what types of walls/floors they were useful for, this could be for homes, workplaces or industrial environments



Materials and methods

To develop the tiles, an optimal way was found using a press machine and a microwave, intermittently using them and switching between them. After that, the tiles were left to dry and harden for 3 weeks after which they were tested. For the compressive strength test, cubes were formed to satisfy the norms for the test.

Results and discussion

Firstly the amount of starch was measured in each potato to see with how much starch there was exactly being worked with. An average percentage of 67% was found.

As for the impact strength, all the tiles withstood the test except the pure starch tile, there were however dents in the other tiles, this could be explained with the fibres giving the tiles more bendable properties, making them more elastic, but less hard.

All of the tests with water (absorption and the washability of stains) showed very poor results, even with coatings applied

Hardness was also tested and the tiles were found to have a hardness of 5-6 on the Mohs scale, this means they could be scratched with a regular knife.

Compressive strength showed a strong increase with the fibres added, although not in higher amounts than 2%.

As for bending strength the fibres had an opposite effect, weakening the tiles.

Some tiles also had formed some fungus on top, this was however due to wrapping them too quickly without letting them dry in open air.

Conclusion

The strength of tiles made from potato scraps do not appear to be greatly enhanced with adding grass fibres, although this is not conclusive and more research could and should be done in these green alternatives.

