

README FILE
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TOPIC: EFFECTS OF ACID RAIN ON MECHANICAL PROPERTIES OF PERIWINKLE SHELL ASH (PSA) BLENDED CEMENT MORTAR.

1.0. MATERIALS PREPARATION.

Periwinkle shells have however been a source of environmental pollution in some instances. The periwinkle shells were collected from a deposition site, clean and calcined at a temperature of 900⁰C.

The simulated acid rain was produced from a stock acid of H₂SO₄ for a pH level of 3, and 4. The acid solution measurements were confirmed with a pH meter.

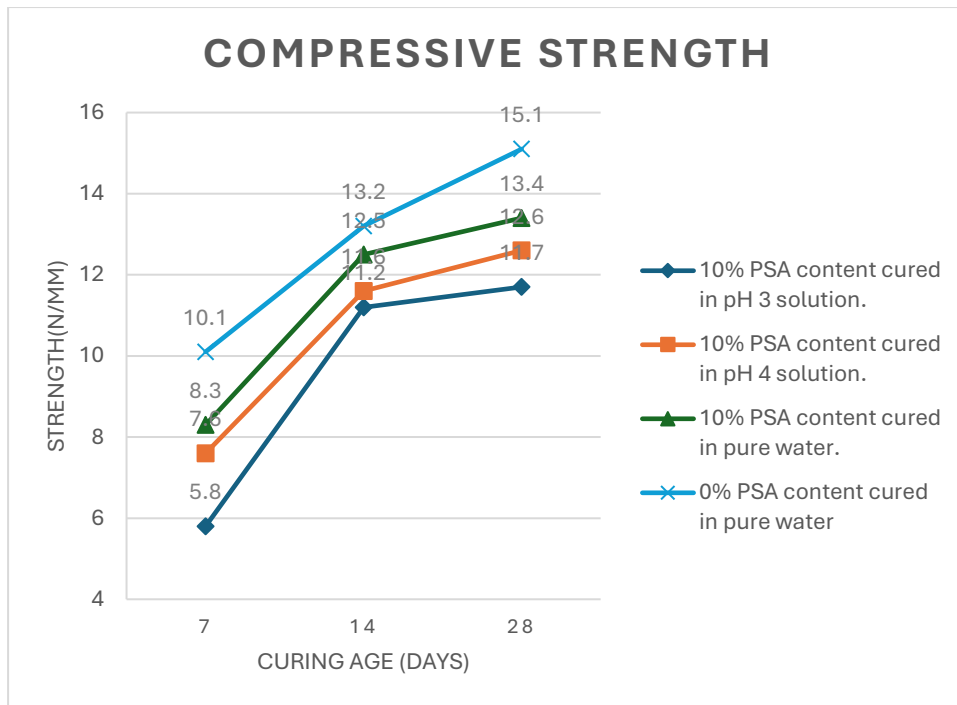
Other tests involved include the specific gravity test, and aggregate grading test using the ASTM C 144-02. The erosion sand used in the experiment passed the aggregate grading test.

2.0. RESULTS AND DISCUSSION.

Several numbers of specimens were produced for curing solutions of pH acid rain of 3 and 4. These specimens were sectioned into 7-, 14-, and 31-days curing ages for each acid rain category.

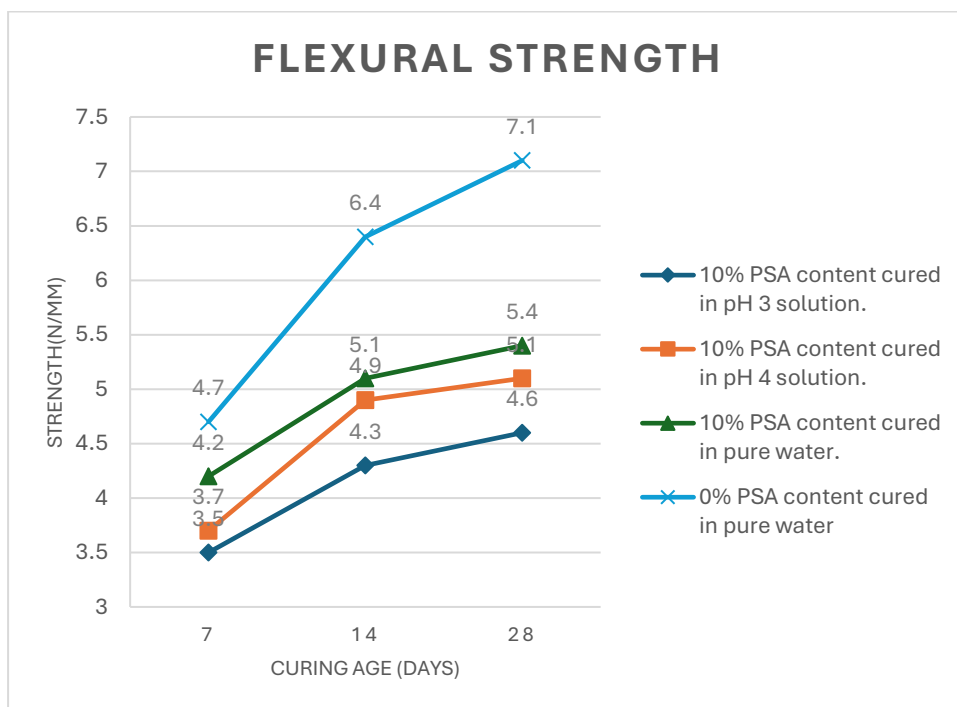
2.1. COMPRESSIVE STRENGTH TEST.

The diagram below represents the results gotten for a certain class of specimens. Also, analysis of variance (ANOVA) was also performed showing a significant difference in the strength gain and at different curing ages.



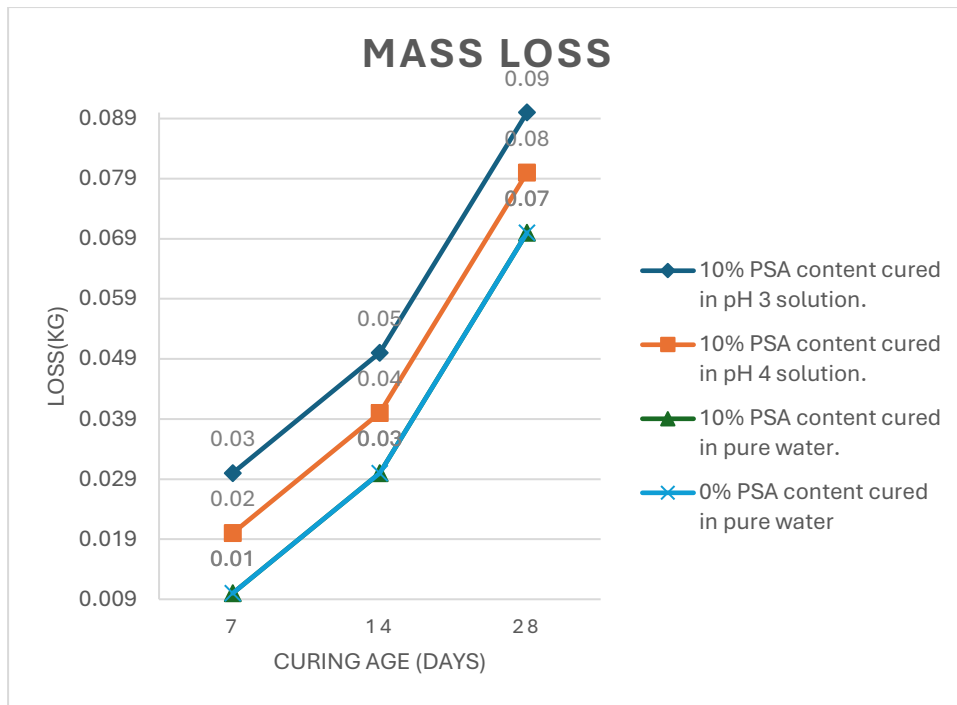
2.2. FLEXURAL STRENGTH TEST.

Below is a diagram showing the flexural strength results. The ANOVA result performed also showed a significant difference in the strength gain, also impacting the curing ages.



2.3. MASS LOSS.

The diagram below represents the results gotten from the specimens. The ANOVA result shows a significant difference in the loss in mass but was insignificant through the curing ages.



3.0. CONCLUSION.

The following conclusions were made from the study.

- The compressive strength was influenced by the presence of the SO_4^{2-} interfering with the CAO compound present in the PSA.
- The flexural strength effect was more significant in the exposed surfaces of the specimens.
- The loss in mass was instigated by the faster rate of more acidic solutions with the specimens to result in gypsum.