CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
S0611

Project Title
The Effect of Wood Ash on the Fire Retardancy of Paint

Abstract

Objectives/Goals
The objective of this study is to determine if wood ash is a suitable fire retardant paint additive. If the potassium bicarbonate content found in wood ash can release enough carbon dioxide, retaining its fire extinguishing properties,then when it is added to latex paint it will lengthen the amount of time for the painted drywall to catch fire and will reduce its flammability.

Methods/Materials
The most essential materials for this experiment include thirty pieces of drywall measuring one and three fourths inches wide and eleven and three fourths inches long, one lighter, one can of indoor wall paint, four ounces of completely burned and ground wood ash, one assistant, and one stopwatch.
The experimenter must add four ounces of wood ash to one paint sample of four ounces and stir thoroughly. Paint fifteen drywall samples with the treated paint and the remaining fifteen with regular paint, allowing them to dry overnight. Hold the lighter perpendicular to the drywall sample and begin the timer. Continue to hold the flame to the sample until it has begun to smoke and the paint begins to peel. Stop the timer when these things have occurred and record the results.

Results
The drywall pieces painted with regular paint quickly caught fire and burned through the coat of paint, quickly smoking. However, the pieces painted with the paint containing ash took longer to burn through the coat of paint, and as soon as the flame was removed the smoking subsided. The drywall pieces painted with the paint containing four ounces of ash burned three times slower than the regularly painted drywall on average.

Conclusions/Discussion
The results of this experiment supported the hypothesis. Each sample painted with the paint containing wood ash was more fire retardant than the samples coated with regular paint. Both the results of this experiment and the results of past experiments in that the wood ash used has shown fire resistant characteristics. With further study on the fire retardant quality of wood ash, the science community will be closer to understanding how to implement this natural substance into the paint industry, potentially preventing structural fires.

Summary Statement
I found that when wood ash is added into wall paint, drywall coated in that paint takes longer to catch fire.

Help Received
I designed and executed the exact specifications of modifying the paint burning the painted samples myself. Tammie Harakas assisted in timing under my direction as I burned the samples.