



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

| | |
|---|---------------------------------------|
| Name(s) Andrea L. Bunn | Project Number J1104 |
| Project Title A Comparison of the Flammabilities of Roofing Materials | |
| Abstract Objectives/Goals This project attempted to discover whether or not wood shingles are as flammable as they are said to be. I also wanted to compare the flammability of newer wood shingles to older wood shingles and to other roofing materials. The statement of the problem for the experiment was, Do treated and untreated wood shingles provide less protection to the roof from the fire damage than tile, composite or concrete shingles? How will the age of a wood roofing shingle affect its flammability? Methods/Materials I created roof models with the shingles I acquired. I placed an approximately 600 degree Celsius charcoal on the top of each roof model. A fan was positioned to provide increased oxygen to the charcoal to simulate a windy day. Then I let the charcoal burn until it went out. Results The concrete and tile shingles were fire-resistant roofing materials and never ignited throughout the testing. The composite shingles melted to the felt under the heat from the charcoal, but did not burn. The aged, untreated wood shingles ignited immediately, and the flames quickly burned completely through these shingles. The charcoal burned through the Class C treated wood shingles to the felt. The treated Class B wood shingles did not produce a flame, when in contact with 600 degree Celsius charcoal for 20 minutes. The burning did not go all the way through the shingles, and the felt was undamaged. Conclusions/Discussion The untreated, aged wood shingles and the Class C wood shingles suffered greater fire damage than the concrete, tile or composite shingles. The aged wood shingles were extremely flammable probably due to their exposure to sunlight and other weather conditions. There was a dramatic difference in the fire-resistance between the treated shingles and the aged, untreated wood shingles. The results suggest that if installed properly, Class B wood shingles can be a dependable roofing material | |
| Summary Statement I compared the flammability of various roofing materials: tile shingles, composite shingles, concrete shingles, Class C treated wood shingles, Class B treated wood shingles, and aged, untreated, wood shingles. | |
| Help Received Thanks to my father who supervised my project; Urbach Roofing Inc. and Chemco who provided me with various roofing materials, and Mr. Dills who provided me with aged wood shingles for testing. | |