



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

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<b>Project Title</b> All Fired Up!	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective in this project was, to learn how does the type of fire protection substance (Barricade Gel, Phos-Chek Class A Foam, Wet Water, and Water) affect the time it takes for Douglas Fir Wood to combust.</p> <p><b>Methods/Materials</b> A 1.22 meter x 2.44 meter sheet of Douglas Fir Wood was taken and cut down into 16 30.48 centimeter x 60.96 centimeter pieces using a circular saw. The pieces were then divided into 5 groups (one piece left over), and 4 of the groups, were covered in their protection substances which include; Barricade Gel, Phos-Chek Class A Foam, Water, and Wet Water (a mixture of water and dish soap). The last group was left as the control and wasn't covered with a protection substance. Then one of the groups was taken and one at a time the pieces were set at a 45 degree angle against a rack. The handheld propane torch was set 45.72 centimeters away from the edge of the wood. The handheld propane torch was then set to 193 degrees celcius and turned on followed by the starting of the stopwatch. Wait until the wood combusts, or catches flame, then count to five and stop the stopwatch. The tests were then repeated with the remaining groups of wood.</p> <p><b>Results</b> Barricade Gel sustained the heat of the flame the longest with an average of 86.6 seconds followed by Phos-Chek Class A Foam which sustained the heat with an average of 82.6 seconds. Then came Wet Water with an average of 28.6 seconds, next was Water with an average of 18 seconds, and last was the Control which sustained the heat of the flame with an average of 17.3 seconds.</p> <p><b>Conclusions/Discussion</b> In conclusion, my hypothesis, which was, Barricade Gel would sustain the heat of the flame the longest, was proven correct by the experimental data. Barricade Gel sustained the heat the longest because it is a gel made of many hydrating polymers that can absorb up to 4 times their weight in water. This allows the wood to be protected for longer as the polymers in the gel acts as a barrier between the wood and the flame.</p>	
<b>Summary Statement</b> My project focuses on finding out which fire protection substance will resist direct flame impingement for the longest amount of time until Douglas Fir Wood combusts.	
<b>Help Received</b> Father helped with experiment at his Fire Station, helped supervise during board construction; Used fire fighting equipment at Los Angeles Fire Station 38 under supervision of two firemen there; Mother helped glue papers to board.	