

Efficacy of Glycol-Borate Treatments to Eleven Common Building Materials on Eastern Subterranean Termites (*Reticuletermes flavipes*)

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Objective

To establish efficacy data for building materials commonly treated with glycol-borate products for the prevention of subterranean termites.

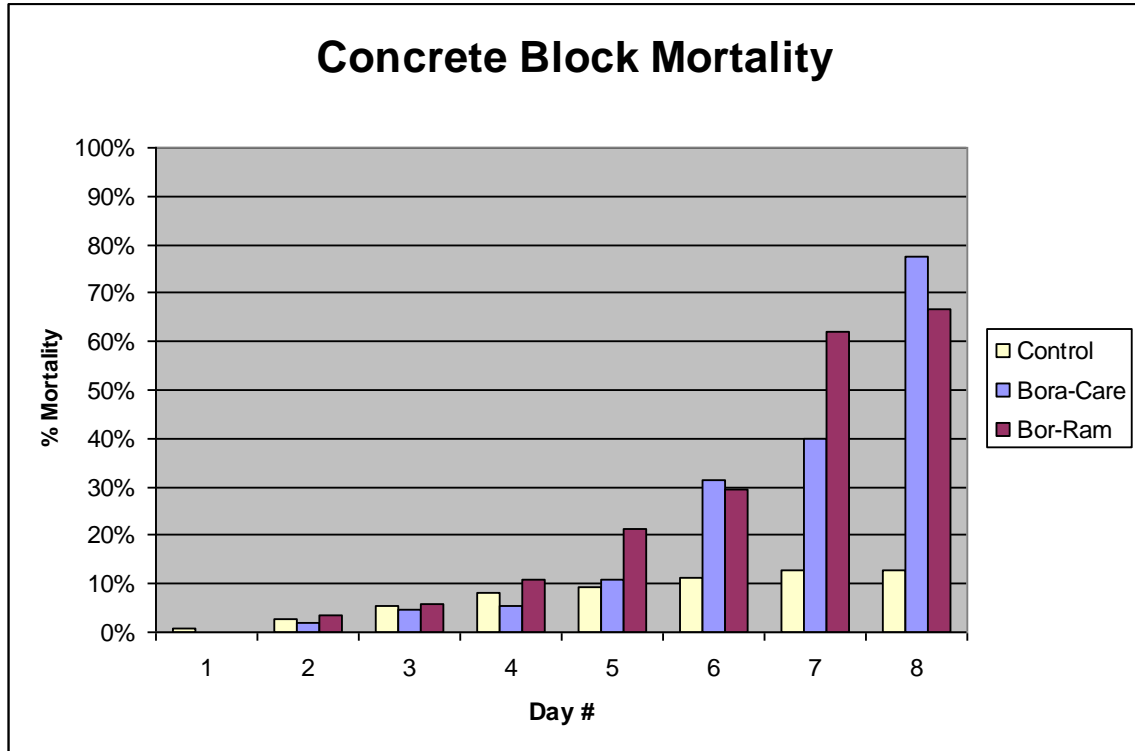
Materials and Methods

Eleven materials commonly used in modern building construction were tested: PVC, concrete, Southern Yellow Pine 2x6, steel stud, Hardibacker, foam insulation pipe sleeve, plastic pipe sleeve, oriented strand board, polystyrene foam insulation, foiled covered polyiso foam insulation, and drywall. For each of the eleven materials nine pieces of material 10cm by 10cm or greater were treated. Three were treated with a 1:1 ratio Boracare / deionized water solution, three were treated with a 1:1 ratio Bor-Ram / deionized water solution, and three were treated with 100% deionized water as a control. Each 1:1 ratio solution was mixed according to the pre-treat section of the label. All treatments were applied according to label directions at a rate of 1 gallon of solution to 800 ft² while the test material was held in the horizontal position. Samples were allowed to dry for 7d at 26° C. A 59ml round soufflé cup (Dart Container Corporation, #200PC, Mason, MI) was modified to add a humidity chamber that was inaccessible to the termites but could maintain near 100% humidity in the soufflé cup during the test period. This assembly was attached to each test material, open side down, using hot-glue only on the outside of the soufflé cup. Deionized water (7.5 ml) was added to the four cotton balls in the humidity chamber and 50 *Reticulitermes flavipes* termites were placed directly on the test material in each chamber. The termites could not avoid the treatment and only had the option of walking on the treated surface or tunneling through the treatment into the test material. Termites were held at ~100% humidity for 7d and mortality taken daily.

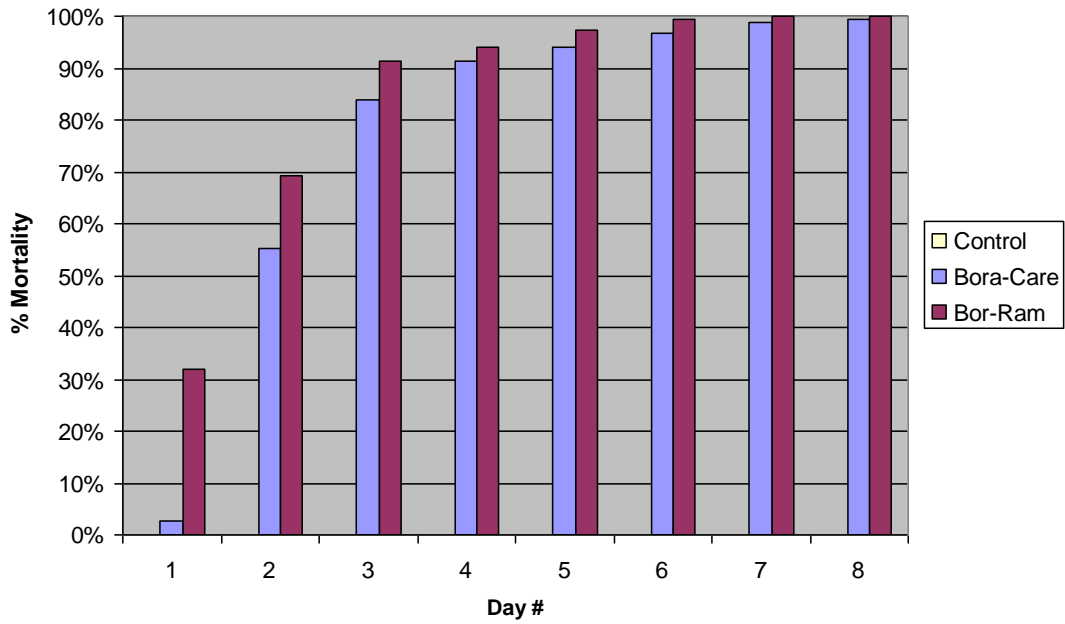
Results

After seven days all Boracare and Bor-ram treatments appeared to have significantly more mortality than the controls. There appears to be a correlation between surface

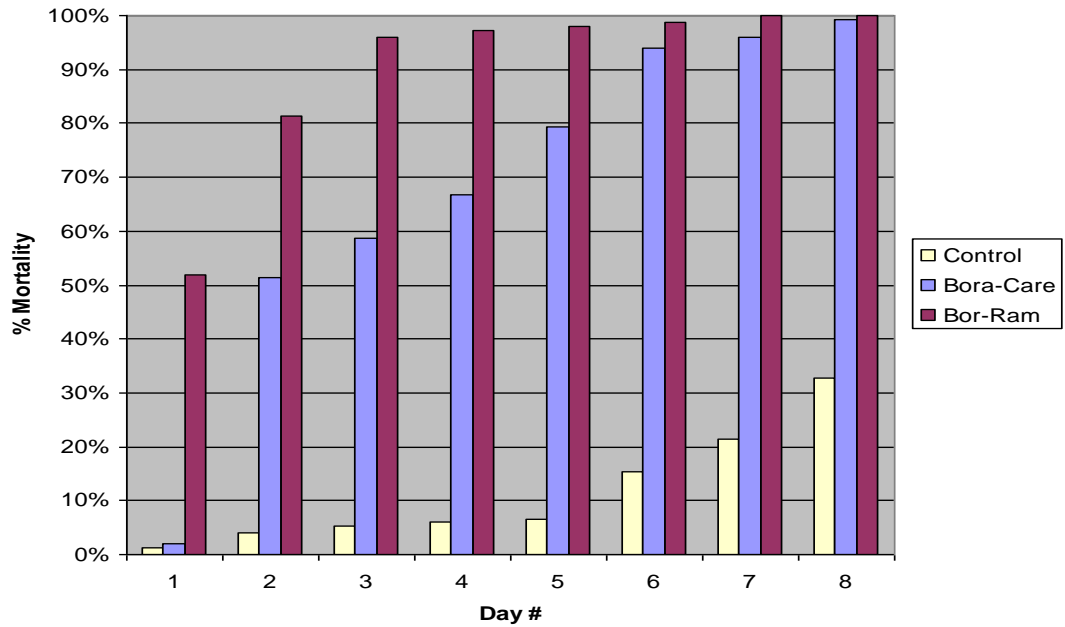
porosity and quickness of control. Non-porous surfaces (PVC, metal stud, foil-covered insulation, and plastic pipe sleeve) had 100% mortality after only one day. Concrete and Hardi-backer, porous materials, had the least mortality after seven days. Foam pipe sleeve appears to be toxic to termites and consistently killed even the controls (71% mortality after seven days).



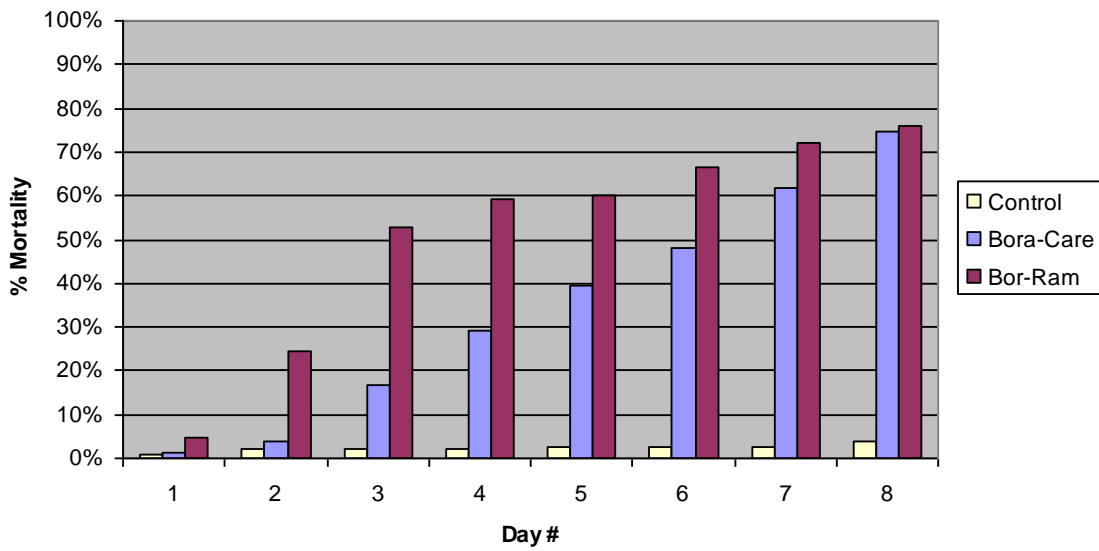
Oriented Strand Board



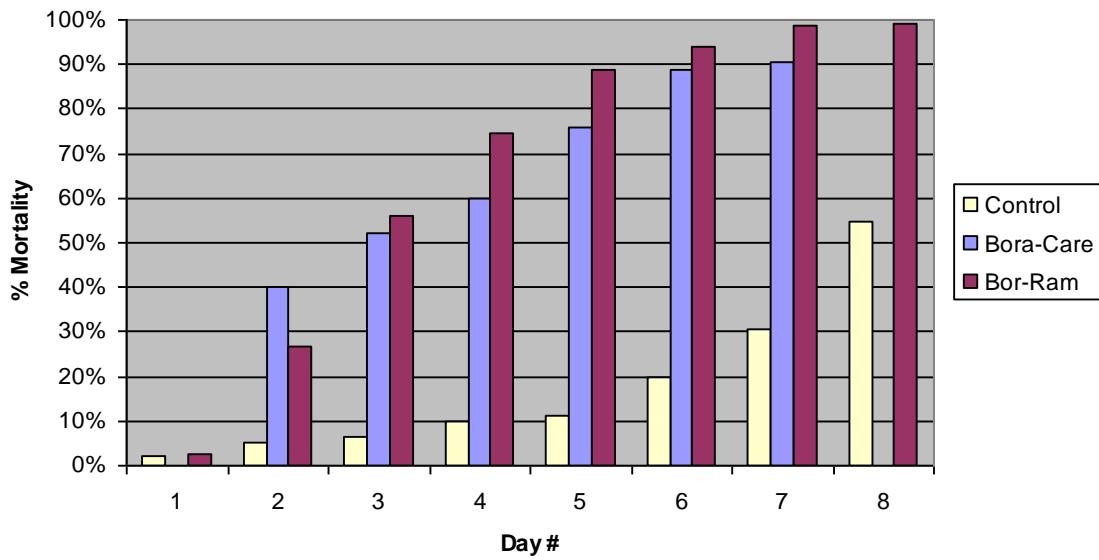
Solid Wood Mortality



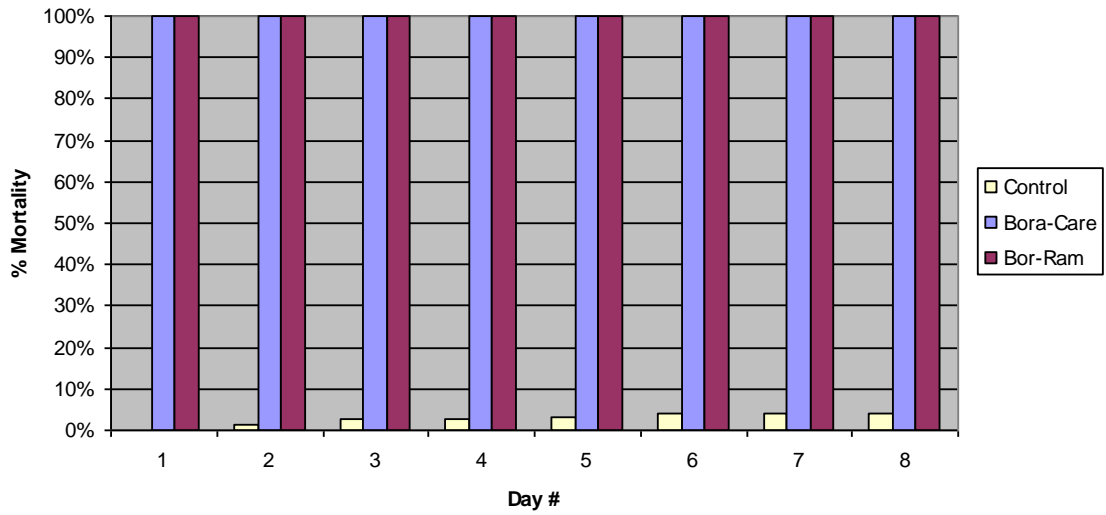
Hardi-backer



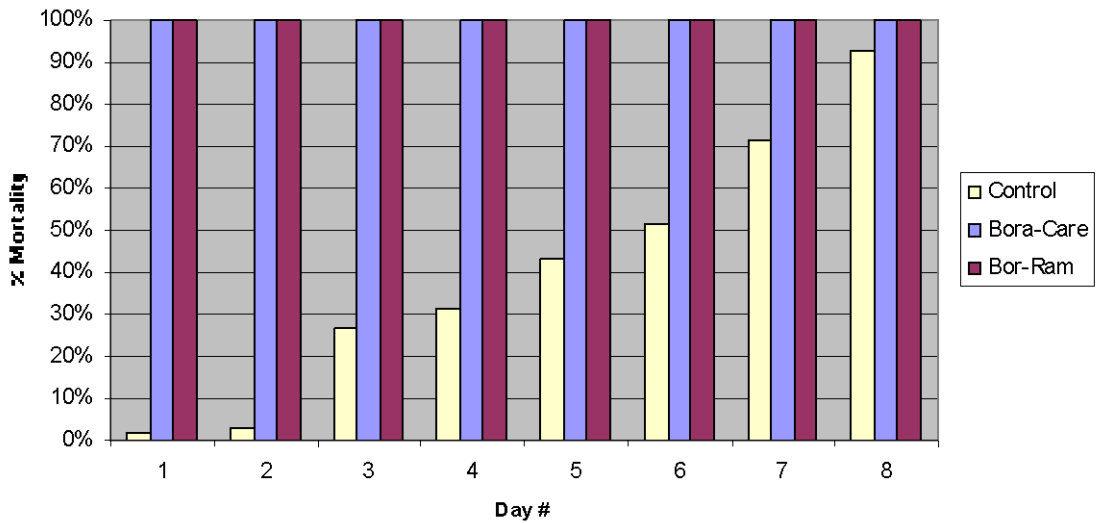
Drywall



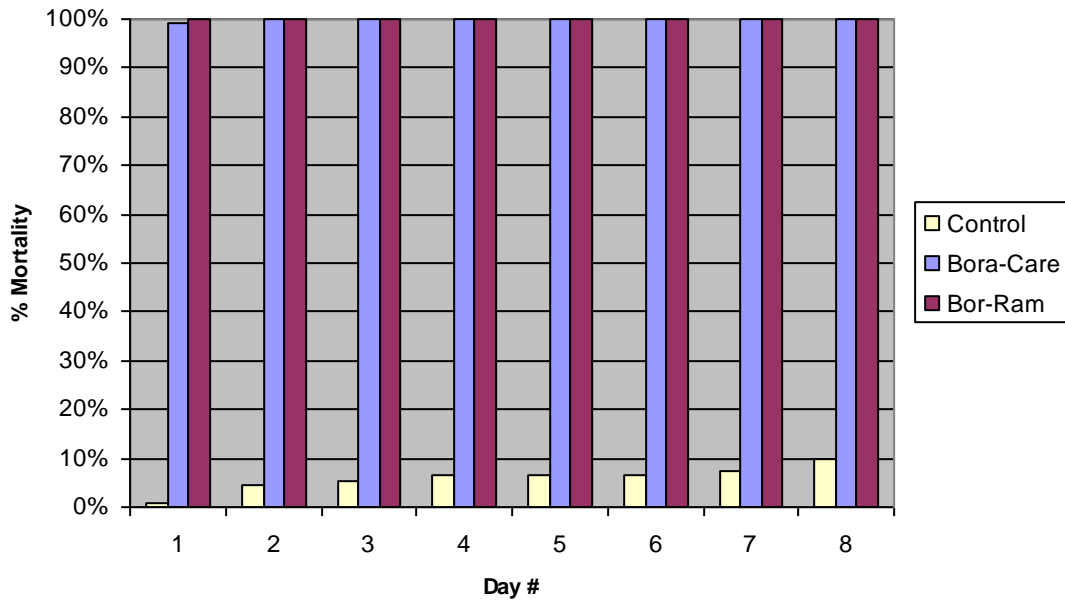
Plastic Pipe Sleeve (red)



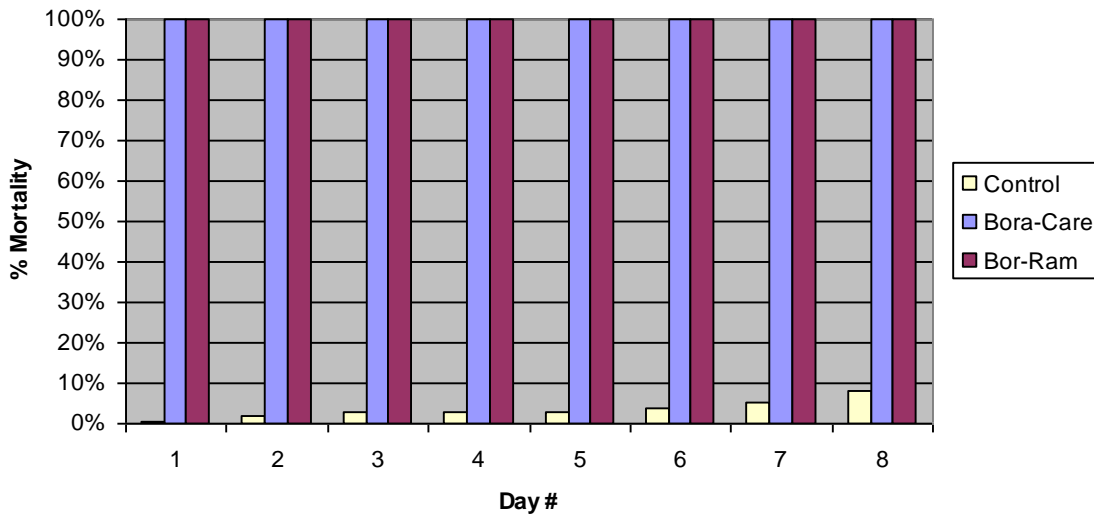
Foam Pipe Sleeve (black)



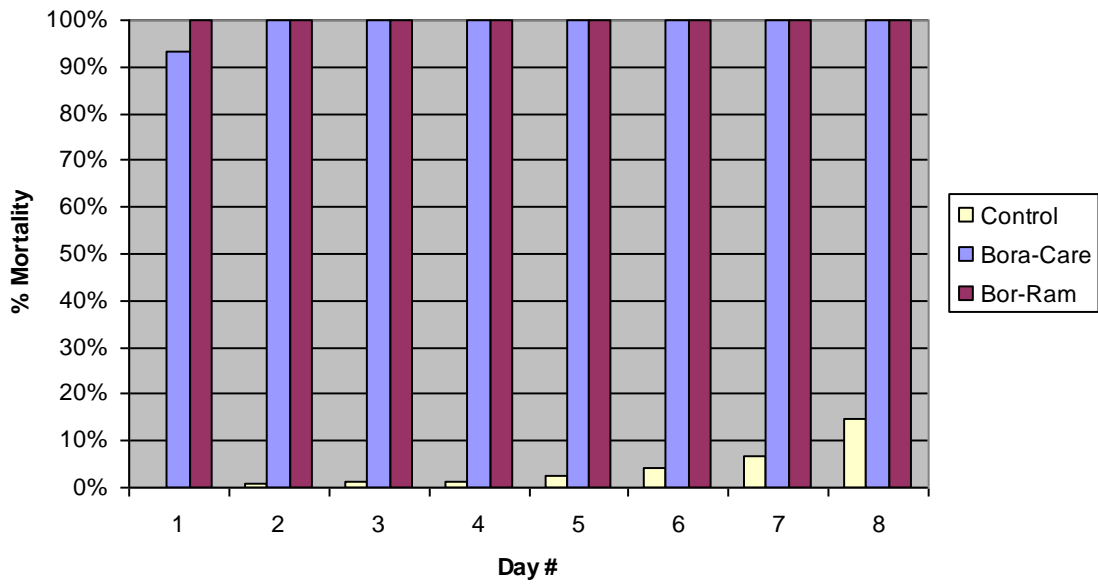
PVC Mortality



Foil-Covered Polyiso Foam Insulation Mortality



Polystyrene Insulation Mortality



Metal Stud Mortality

