

ISOCYCLOSERAM TECHNOLOGY FOR CONTROL OF TERMITES

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Abstract Isocycloseram or PLINAZOLIN[®] technology is a broad-spectrum Isoxazoline insecticide (IRAC Group 30) active against numerous insect orders. Two characteristics suggest that PLINAZOLIN Technology[®] may be an effective termiticide: 1) delayed activity that allows exposed insects to transfer toxicant to nestmates via grooming and trophallaxis, and 2) immobility in the soil that allows for a long-lasting soil-applied termiticide. One field and two laboratory studies demonstrate activity of two formulations against subterranean and drywood termites. To simulate the treatment of soil prior to pouring a building foundation, plots were drenched with five concentrations of Isocycloseram technology 400SC and either left exposed to the environment or covered with concrete. Annually for 7yr, feeding damage on indicator wood blocks was rated for feeding damage. One test site was populated by *Heterotermes aureus*, the others by *Reticulitermes flavipes*. 100% of indicator blocks placed on soils treated with 1000 and 2000 ppm and exposed to sun & rain remained undamaged for 7yr. Under concrete, 100% of indicator blocks placed on soils treated with 500, 1000 and 2000 ppm of Isocycloseram technology were undamaged. These results surpass the 5yr efficacy threshold required for US registration and indicate that Isocycloseram technology can protect structures. To simulate the application to lumber during construction, wood blocks were treated with three concentrations of Isocycloseram technology 45SC and stored in the lab. Blocks were challenged 1d after application and then annually. Termites were collected from three *Coptotermes formosanus* and one *R. flavipes* populations and exposed to treated wood for 24h before removal to clean dishes of moist sand. Exposure data has been generated up to 2yr after application. For 2yr, >90% mortality is observed within 2d of exposure. Preliminary results suggest that Isocycloseram technology can protect structural lumber. To simulate treatment of termite galleries, two concentrations technology were applied to model galleries. *Incisitermes minor* were introduced. 250 and 500 ppm Isocycloseram technology provided 80% mortality in 8d. Surviving termites were intoxicated and would not be a threat to structures.

Key words *Coptotermes formosanus*, *Reticulitermes flavipes*, *Incisitermes minor*, termiticide