

PRODUCT PERFORMANCE / EFFICACY REVIEW

Mark Suarez, Entomologist - IB



Mark Suarez
20 November 2007

DATE: 20 November 2007

EPA REG. NUMBER: 71653-6

PRODUCT NAME: Genics CuB
REGISTRANT: Genics Inc.

PM: Adam Hayward, RM 34
REVIEWER: Stacey Grigsby

DECISION #: 362915
DP BARCODE: 327808

ACTION: A55

ACTIVE INGREDIENT(S):
011103, Boron Sodium Oxide,
tetrahydrate.....9.1%
011101, Boric Acid.....0.51%
023401, Copper Hydroxide.....0.96%

TYPE: Wood Composite Additive

OPPTS GUIDELINE(S): 810.3500
810.3600, as applicable

MRID:	47105701	Submitted	GLP? No.
	47105707	“	GLP? No.
	47105708	“	GLP? No.
	47105709	“	GLP? No.
	47105710	“	GLP? No.
	47105711	“	GLP? No.
	47105712	“	GLP? No.
	47105713	“	GLP? No.
	47105714	“	GLP? No.
	47105715	“	GLP? No.
	47105716	“	GLP? No.
	47105717	“	GLP? No.
	47105718	“	GLP? No.
	47105719	“	GLP? No.
	47105720	“	GLP? No.
	47105721	“	GLP? No.
	47105722	“	GLP? No.
	47105724	“	GLP? No.
	47105726	“	GLP? No.

47139703	“	GLP? No.
47139704	“	GLP? No.
47139705	“	GLP? No.
47139706	“	GLP? No.
47139707	“	GLP? No.
47148701	“	GLP? No.
47148702	“	GLP? No.

SITES & PESTS

Indoors/Outdoors:	Termites &
Wood & Wood	other Wood
Composites	Destroying
	Insects

STUDY APPLICATION RATE: Variable, see individual summaries

LABEL APPLICATION RATE: RTU: Spray, Brush, Dip, Roller (or other thorough coverage of surface)

MRID 47105701. Grace, K. (2002) Resistance of OSB Containing Cobra Crush Fungicide/Wood Preservative to Termite Attack. Project Number: AWPA/E1/97. Unpublished study prepared by University of Hawaii. 16 p.

The data provided in MRID 47105701 were developed from laboratory trials involving the treatment of wood wafers with Cobra Crush [EPA Reg. No. 71653-4] and Zinc Borate. The treated and control wafers were exposed to 400 Formosan subterranean termites (*Coptotermes formosanus*) for 4 weeks in a no choice test. The trial was replicated three times with two samples from each of three replicates.

The data generated are not applicable to the subject registration to differences between the test and subject formulations.

MRID 47105707. Wall, W; Prins, C; Smart, R (2004) Efficacy and Diffusibility of Copper Borate. Proceedings of the American Wood Preservers' Association (2004): 1-12.

The data provided in MRID 47105707 were generated from field trials in which telephone poles were treated with CobraRods. Tests for mold and decay resistance were conducted, but not termite data were generated.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations and the fact that the study provided not data on termites.

MRID 47105708. Lloyd, J. (2004) Framing Stage Treatments in the USA: (Genics Cub). Unpublished study prepared by Nisus Corp. 17 p.

The information contained in MRID 47105708 can be most accurately characterized as a position paper on the suitability of borates for use as a wood preservative.

The paper provided no product specific information about the subject formulation.

MRID 47105709. Lloyd, J.; Fogel, J.; Kirkland, R; et. al. (2007) Control of Carpenter Ants using Borate Treated Wood Products: (Genics Cub). Unpublished study prepared by U.S. Borax Inc. and Bio Research. 13 p.

The study, MRID 47105709, tested the effectiveness of a borate pressure treatment of southern yellow pine (SYB) or oriented strand board (OSB) against Carpenter ant (*Camponotus modoc*). The 12 week test demonstrated that 0.28 lb/ft³ B₂O₃ (~0.5% BAE) was adequate to protect woods from carpenter ants.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105710. Lanz, B.; Manser, P.; Graf, E. (1998) Water-Based Wood Preservatives For Curative Treatment of Insect-Infested Spruce Constructions: (Genics Cub). Project Number: IRG/WP 98/30171. Unpublished study prepared by Swiss Federal Laboratories for Materials Testing and Research (EMPA).

The information contained in MRID 47105710 can be most accurately characterized as a position paper on the suitability of borates for use against beetles.

The paper provided no product specific information about the subject formulation.

MRID 47105711. Wall, W.; Goodman, J.; Smart, R. (2007) Copper/Boron Mobility in Pine and Cedar: (Genics Cub). Unpublished study prepared by Genics Inc. and Duke Energy. 10 p.

The study, MRID 47105711, tested the diffusion of borates and copper (from Cobra and Impel rods) in pine and cedar woods. The test demonstrated that boron migrated farther (6x) than copper in the wood.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105712. Wall, W.; Smart, R. (2006) Copper Borate for the Protection of Engineered Wood Composites: (Genics Cub). Project Number: IRG/WP/05/50XXX. Unpublished study prepared by Genics Inc. 15 p.

The study, MRID 47105712, tested the effectiveness of treating OSB with copper borate and other pesticides against mold, decay, and *C. formosanus* in laboratory studies. The data indicate that the Cu/B formulations tested were somewhat effective against the Formosan termite; however significant damage (AWPA Rating <9) occurred in 8 of 11 treatments within 28 days. Additional data were provided on chemistry occurring with treated OSB and the efficaciousness of the test formulations against mold and decay.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations. Additionally, the laboratory data provided do not provide the data necessary to evaluate a product as a stand alone termite pretreatment.

MRID 47105713. Morris, P.; Grace, K.; Tsunoda, K.; et. al. (2003) Performance of Borate-Treated Wood Against Reticulitermes flavipes in Above-Ground Protected

Conditions: (Genics Cub): Paper Prepared for the 34th Annual Meeting, Brisbane, Australia. Project Number: IRG/WP/03/30309. Unpublished study prepared by Forintek Canada Corp., University of Hawaii at Manoa, Kyoto University and Duke Energy. 11 p.

The data provided in MRID 47105713 were generated from field trials in which woods were treated with borates or chromated copper arsenate (CCA) and exposed to termite pressure in Canada. The treated woods demonstrated moderate resistance to termite attack, according to the AWPAs damage rating scale. However, the control damage observed was minimal.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations and the limited termite pressure documented.

MRID 47105714. Smith, W.; Lloyd, J. (2004) Prevention of Termite Tubing Over Non-Wood Construction Materials Using Glycol Borate: (Genics Cub). Project Number: IRG/WP/04/30358. Unpublished study prepared by: Louisiana State University and Nisus Corp. 16 p.

The data provided in MRID 47105714 were generated from laboratory trials in which concrete was treated with BoraCare and exposed to foraging termites. The trial was designed to evaluate the effectiveness of a BoraCare application as a deterrent to termite foraging tube construction. The treated concrete demonstrated reduced tunneling.

The data provided in this study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105715. Grace, J.; Oshiro, R.; Byrne, T.; et al. (2000) Termite Resistance of Borate-treated Lumber in a Three-year Above-ground Field Test in Hawaii: (Genics Cub): Paper Prepared by for 31st Annual Meeting, Kona, HI. Project Number: IRG/WP/00/30236. Unpublished study prepared by University of Hawaii at Manoa, Forintek Canada Corp. and Kyoto University. 8 p.

The data provided in MRID 47105715 were generated from field trials in Hawaii. Woods were treated with borates, DOT + DDAC, ACZA, or chromated copper arsenate (CCA) placed in weatherproof enclosures, but exposed to termite pressure for 3 years. The treated woods demonstrated moderate resistance to termite attack, according to the AWPAs damage rating scale. However, the control damage observed was minimal. (A concurrent test was run in Japan, but data were not provided.)

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105716. Grace, J.; Byrne, A.; Morris, P.; et al. (2004) Six-year Report on the Performance of Borate-treated Lumber in an Above-ground Termite Field Test in Hawaii: (Genics Cub): Paper Prepared for the 35th Annual Meeting, Ljubljana, Slovenia. Project Number: IRG/WP/04/30343. Unpublished study prepared by University of Hawaii at Manoa, Forintek Canada Corp. and Kyoto University. 11 p.

The data provided in MRID 47105716 were a continuation of the data reported in MRID 47105715, generated from field trials in Hawaii. Woods were treated with borates, DOT + DDAC, ACZA, or chromated copper arsenate (CCA) placed in weatherproof enclosures, but exposed to termite pressure for 6 years. The treated woods demonstrated moderate resistance to termite attack, according to the AWPAs damage rating scale.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105717. Grace, J.; Byrne, A.; Morris, P.; et al. (2006) Performance of Borate-Treated Lumber After 8 years in an Above-Ground Termite Field in Hawaii: (Genics Cub): Paper Prepared for the 37th Annual Meeting, Tromso, Norway. Project Number: IRG/WP 06/30390. Unpublished study prepared by University of Hawaii at Manoa, Forintek Canada Corp. and Kyoto University. 11 p.

The data provided in MRID 47105717 were a continuation of the data reported in MRIDs 47105715 and 47105716, generated from field trials in Hawaii. Woods were treated with borates, DOT + DDAC, ACZA, or chromated copper arsenate (CCA) placed in weatherproof enclosures, but exposed to termite pressure for 8 years. The treated woods demonstrated moderate resistance to termite attack, according to the AWPAs damage rating scale. The termite pressure observed in untreated controls was only marginally acceptable in years 6, 7, and 8.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105718. Babuder, G.; Petric, M.; Cadez, F.; et al. (2004) Effectiveness of the New Chemical Wood Preservative Borosol 9 Against a House Longhorn Beetle *Hylotrupes bajulus*: (Genics Cub). Project Number IRG/WP 04/30355. 7 p.

The study submitted under MRID 47105718 provided data on the effectiveness of Borasol 9 as a treatment for cerambycid infestations. The data provided indicate that the test formulation is efficacious against these organisms.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105719. Babuder, G.; Petric, M.; Cadez, F.; et al. (2007) Fungicidal Properties of Boron Containing Preservative Borosol 9. Project Number: IRG/WP/04/30348. Unpublished study prepared by Borosol d.o.o., University of Ljubljana and Centre Technique du Bois et de l'Ameublement. 8 p.

The study submitted under MRID 47105719 provided data on the effectiveness of Borasol 9 as a treatment against fungi. The data provided indicate that the test formulation is efficacious against these organisms.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105720. Dirol, D. (1989) Diffusion of Fused Borate Rods in Top Ends of Poles. Project Number: IRG/WP/3518. Unpublished study prepared by Societe Cobra,

Koppers-Hickson Timber Protection Ltd. and Research Institute for Sustainable Humanosphere. 8 p.

The study, MRID 47105720, examined the diffusion of borates through poles for fused borate rods in the presence and absence of a liquid borate treatment.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105721. Drysdale, J. (1994) Boron Treatments for the Preservation of Wood - A Review of Efficacy Data for Fungi and Termites. Project Number: IRG/WP/94/30037. Unpublished study prepared by Genics Inc., Societe Cobra and Koppers-Hickson Timber Protection Ltd. 24 p.

The information contained in MRID 47105721 can be most accurately characterized as a review paper on the use of borates and other wood preservatives. Fungi and termites are specific foci of the review.

The paper provided no product specific information about the subject formulation.

MRID 47105722. Tsunoda, K.; Byrne, A.; Morris, P.; et. al. (2006) Performance of Borate-Treated Lumber After 10 years in a Protected, Above-Ground Field Test in Japan: (Genics Cub): Final Report: Paper Prepared for the 37th Annual Meeting, Tromso, Norway. Project Number: IRG/WP/06/30395. Unpublished study prepared by Kyoto University, Forintek Canada Corp. and University of Hawaii at Manoa. 8 p.

The data provided in MRID 47105722 were from a companion study of the data reported in MRIDs 47105715, 47105716, and 47105717, generated from field trials in Hawaii. In this trial, woods were treated with borates, DOT + DDAC, ACZA, or chromated copper arsenate (CCA) placed in weatherproof enclosures, but exposed to termite pressure for 10 years in Japan. No data tables were provided, but the narrative indicates that the treated woods demonstrated adequate resistance to termite attack.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105724. Clausen, C.; Yang, V. (2004) Multicomponent Biocide Systems Protect Wood from Decay Fungi, Mold Fungi, and Termites for Interior Applications. Project Number: IRG/WP/04/30333. Unpublished study prepared by U.S. Forest Service, Forest Products Laboratory. 10 p.

The study, MRID 47105724, examined the efficaciousness of boric acid mixed with voriconazole and ethanolamine against termites.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47105726. Dirol, D. (1988) Borate Diffusion in Wood From Rods and Liquid Product Application to Laminated Beams: (Genics Cub). Project Number: IRG/WP/3482. Unpublished study prepared by Centre Technique du Bois et de l'Ameublement. 14 p.

The data provided in MRID 47105724 demonstrated the diffusion of boric acid from fused rods and liquid form into wood.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47139703. Quarles, W. (1992) Borates Provide Least-Toxic Wood Protection. *The IPM Practitioner* 14(10): 1-11.

The information contained in MRID 47139703 can be most accurately characterized as a position paper presenting the benefits of using borates for wood protection. The low mammalian toxicity of borates was a focus of the review.

The paper provided no product specific information about the subject formulation.

MRID 47139704. Johnson, B.; Foster, D. (1991) Preservatives Loss from Stakes Treated with Ammoniacal Copper Borate. *Forest Products Journal* 9(41): 35-38.

The data provided in MRID 47139704 demonstrated a reduction in the leaching of boric acid from wood pressure treated with ammoniacal copper borate in both above and below ground applications over 11 years.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47139705. Johnson, B.; Gutzmer, D. (1978) Ammoniacal Copper Borate: A New Treatment for Wood Preservation. *Forest Products Journal* 28(2): 33-36.

The data provided in MRID 47139705 were generated by exposing leached or unleached wood treated with ammoniacal copper borate to decay and termites in the laboratory for 4 weeks.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations.

MRID 47139706. Grace, K. (2007) Review of Recent Research on the Use of Borates for Termite Prevention. p 85-92.

The information contained in MRID 47139706 can be most accurately characterized as a review paper discussing borates for wood protection. The results of research published to the time of publication (circa 1997) of the paper were discussed in an effort to synthesize a comprehensive understanding of borate use for termite control.

The paper provided no product specific information about the subject formulation.

MRID 47139707. Klotz, J.; Moss, J. (1995) Oral Toxicity of a Boric Acid- Sucrose Water Bait to Florida Carpenter Ants (Hymenoptera: Formicidae). *J. Entomol. Sci.* 31(1): 9-12

The data provided in MRID 47139707 were generated from laboratory trials assessing the toxicity of boric acid in a sucrose solution to carpenter ants, *Camponotus abdominalis floridanus*.

The data provided in the aforementioned study were not applicable to the desired amendment due to differences between the test and subject formulations and the fact that not directions for use are provided on the subject label for use as a carpenter ant bait.

MRID 47148701. Minchin, D.; Morris, P. (2001) An Eight-Week Mould Resistance Test of OSB Treated with Genics Copper/Borate Formulation. Unpublished study prepared by Forintek Canada Corp. 16 p.

The data provided in MRID 47148701 were the result of an 8 week laboratory test of copper borate treated OSB panels exposed to mold.

The data provided in the aforementioned study were not applicable to the desired amendment due to fact that the study was against mold.

MRID 47148702. Clark, J.; Morris, P. (2001) Durability of OSB Incorporation a Copper/Borate Formulation in a Laboratory Soil Jar Decay Test. Project Number: 2001/3015. Unpublished study prepared by Forintek Canada Corp. 13 p.

The data provided in MRID 47148701 were the result of an 8 week laboratory test of copper borate treated OSB panels exposed to mold.

The data provided in the aforementioned study were not applicable to the desired amendment due to fact that the study was against decay.

ENTOMOLOGIST'S COMMENTS AND RECOMMENDATIONS:

The determination of the efficacy reviewer is provided below by taxonomic group.

1. Termites (Isoptera)

The data and review papers provided in the submission fail to adequately support the addition of claims that the product may be used as a termiticide. The fundamental deficiency is the fact that product specific data demonstrating that the product provides complete protection from termite attack in field trials with adequate termite pressure. Remove remedial and preventive termite claims from the label.

The registrant is encouraged to contact the Registration Division Insecticide Branch in order to follow or develop an appropriate protocol through which the subject formulation can be tested.

2. Carpenter ants (*Camponotus* spp.)

The data provided support the claim that the product is effective as a preventative and curative treatment against carpenter ants.

3. Beetles (Coleoptera)

The data provided support claims against wood boring beetles.