

Borate-treated Wood vs. Termites



Borate-treated sill plates have been tested in Canada, Japan and Hawaii. The Canadian test site is maintained in collaboration with the City of Kincardine ON. The testing in Japan and Hawaii was in collaboration with Prof. Kunio Tsunoda of Kyoto University and Prof. Ken Grace of the University of Hawaii respectively. Borate treatment, as well as CCA and ACZA treatment, provided long-term protection to structural wood against destructive termite attack.

Commodity: Sill plates

Test method: Protected above ground + feeder stakes to attract subterranean termites

Test sites: Kincardine, Ontario; Kagoshima, Japan; Waimanalo, Hawaii

Date of installation: 1995-1997

Preservative: Disodium octaborate tetrahydrate (DOT)

Treatment: Shell treatment and through treatment

Wood species: Hemlock (*Tsuga heterophylla*), amabilis fir (Pacific silver fir, *Abies amabilis*)

Canada site:

Borate treatment: Hemlock to a mean retention of 1.4% BAE ($3.3 \text{ kg/m}^3 \text{ B}_2\text{O}_3$) in a 25-mm shell to meet CSA 080.2-97 for out-of-ground contact. Amabilis fir to a mean retention of 1.3% BAE through treatment, just below the retention requirement in CSA 080.2-97 for out-of-ground contact. Hem-fir to 1.4% BAE shell treatment + DDAC.

References samples: Untreated hem-fir, western red cedar, hem-fir CCA-treated to meet CSA 080.2-1997 for exposure above-ground

Conditions of treated samples: All performed well. Individual samples had superficial feeding or cosmetic damage.

Conditions of untreated samples: Hem-fir had moderate attack after 10 years

Japan site:

Borate treatment: 2% BAE shell, 3% BAE shell, 2% BAE through, 3% BAE through, 2% BAE +DDAC shell

References samples: Untreated hem-fir, CCA-treated hem-fir, plantation-grown Hinoki

Conditions of treated samples: Two samples with 2% BAE shell treatments + DDAC rated as moderate or severe attack, all others performed well.

Conditions of reference samples: Plantation-grown Hinoki and untreated hem-fir had the same level of severe attack

Hawaii site:

Treatment: Hem-fir treated to 2% BAE shell treatment, 2% BAE through treatment, 2% BAE+DDAC half shell and half through treatment, 3% BAE shell treatment, 3% BAE through treatment

References samples: Untreated hem-fir, CCA-treated hem-fir and ACZA treated Douglas-fir both to 4 kg/m³

Conditions of treated wood: 3% borate through treatments performed better than other treatments

Conditions of untreated samples: Untreated hem-fir failed in the second year

Overall result: 2% BAE shell treatment was equivalent to CCA treatment for above ground for areas with severe termite hazard

Projected average service life of properly borate treated products: Over 50 years in Japan and Canada.

Note: borate treatment of framing is normally used in conjunction with soil treatment, baiting and other termite management measures.