（学位第３号様式）

学　位　論　文　要　旨

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題　目	Studies on Termite Control System around the Foundation of Wooden House （木質住宅における基礎周囲の防蟻に関する研究）

By the revision of the Building Standard Law for long-life quality housing applied, to secure durability of wooden houses has become increasingly important. When studying termite-proofing methods that determine the durability of such houses, it is very important to know the activities of subterranean termites and the characteristics of their behavior both inside and around the foundation. For buildings, however, there have been few studies on subterranean termite behaviors around the foundation or on the application of termite-proofing methods to intrusion routes of the foundation.

In Chapter 1, the activities of subterranean termites around and inside the foundations of wooden houses were examined by a field-testing method using a miniature house that imitated an actual building. In the non-treated spot, the *Coptotermes formosanus* entered from the sleeve for insertion pipe section of the foundation, passed the end of the PE-sheet and through the slight gap occurring at the external corner of the floor concrete, and constructed a termite tunnel at the internal corners of the foundation. In addition, the termite tunnel extended over the foundation packing, and the sill, stud, and plywood roof sheathing, showed feeding damages. The adhesion ratio of termite soil on the underside surface of the PE-sheet that was laid on the soil indicated that termites were very active on the PE-sheet. In the termite control treatment spot, we found no termite tunnel constructed inside the foundation even 7.9 years after treatment. The adhesion ratio of termite soil on the PE-sheet was half that in the non-treatment spot, and no adhesion of new termite soil was observed. These result shows that termite control treatment was effective in intrusion prevention of termites.

In Chapter 2 , I conducted indoor tests to evaluate termite control in two different types of rubber [non-vulcanized butyl rubber（NVBR）and ethylene propylene diene monomer (EPDM)] with or without added anti-termite chemicals for termite-proofing the penetrations of plumbing in the foundations of wooden houses. In addition, I designed sample materials, which had a shape likely to be used in the actual site in the sleeve pipe method, for both supply and drainage piping. I examined the termite-proofing performance of each sample material by the field tests.

For the results of the indoor tests, boring by termite was observed in the NVBR without added disodium octaborate tetrahydrate (DOT). Furthermore, boring by the termite was inhibited by DOT added to the NVBR and absolutely none were observed in added 0.175% bifenthrin. In the field tests, no feeding damage or penetrations by termite were observed in the NVBR, regardless of whether it contained DOT. In the indoor tests, EPDM packings showed similar tendency as that observed NVBR. However, for the supply and drainage piping of EPDM packing, feeding damage because of the termite was not observed in the field tests.

As the leaching of DOT from NVBR and EPDM packing was slight in each test, it is recognized that these rubber material maintain an effectual termite control function for a long period. It is confirmed that these rubber materials were probably enough to use for termite control in plumbing penetrations in the foundation of wooden houses.