

Application and Technology Note AN-3004 Rodent Deterrence in All-Dielectric Cables

Optical cables are exposed to a variety of mechanical and environmental hazards that may reduce their useful service life after initial installation. Damage to installed cable and equipment from gnawing rodents has been documented for decades. Direct buried cables have been degraded by pocket gophers, cables installed in aerial applications have been deteriorated by squirrels, and intra building cables have been damaged by rats and mice. The impact of these effects may be quite severe and result in service interruptions and costly repairs. Communication outages and structural fires due to short circuits have been directly attributed to cable damage caused by rodents. Preventative measures to enhance resistance to this hazard adds value to the overall network reliability.

The gnawing damage is created by the incisors of the rodent. These teeth do not stop growing over the lifetime of the animal. Because of this, the animal must continue to wear them down so that they do not cause injury or reduce the ability for the animal to feed itself. These animals gnaw for their own survival and, because they are co-located, cables can provide a readily available material for dental maintenance. The key to prevention is to position the cable to be less appealing than alternative materials in the same vicinity.

Traditional rodent protection for optical cable is achieved by making it difficult for the animal to gain access to or fit the cable into its mouth. In direct burial applications, increasing burial depth or utilizing a loose packing material like sand will significantly reduce rodent attack. Placement of cable in an oversized duct or intentionally increasing the outer diameter of the cable will create conditions that do not support the gnawing behavior. These particular design elements and installation practices are achievable; but, come with an associated higher cost due to the additional labor and/or materials needed to execute the special considerations.



In order to balance incurred cost with functional performance AFL has developed rodent deterrent cable jacketing system that can be utilized in a number of Tactical and Outside Plant cable designs. This rodent deterrent cable jacket is an effective method to enhance rodent deterrence for cable applications that are restricted by cable size or require the use of only non-conductive materials. This jacket option offers a non-toxic, safe and effective method to reduce interactions between installed cables and indigenous rodents by creating an unpleasant experience if an attempt is made to chew on the cable. Test results demonstrate that this material reduces the likelihood of rodent bites compared with standard cable jacket materials. Cables that utilize the rodent deterrent jacket will meet the same industry performance standards and flame resistance standards as the baseline cables without the rodent protection option.

AFL strives to produce and supply world class cables for our customers. The rodent deterrent option provides an increased protective functionality that many types of deployment applications should consider as a means to extend the useful lifetime of networks. Adapting this preventative methodology to additional cable designs can be considered on a case-by-case basis by AFL Engineering.