

WIPE, Test Code 1046-Total Thermophilic Actinomycete (Actinobacteria) Count

Thermophilic actinomycetes or actinobacteria are gram-variable branching rods that produce very small airborne spores (1 ul). A few actinobacteria are thermophilic, which means that they have an optimal range for growth between 40°C and 80°C. Common species of thermophilic actinobacteria include *Thermoactinomyces vulgaris* and *Saccharopolyspora rectivirgula*.

The most important health effects from exposure to actinobacteria is hypersensitivity pneumonitis (HP). HP is a disease of the lower respiratory tract caused by an immune response to inhaled antigens.

Actinobacteria, including thermophilic species, are ubiquitous. They are abundant in soil. In fact, the odor we commonly associate with freshly turned soil is a volatile organic compound produced by actinobacteria. In soil, although they are much slower growers compared to other bacteria and fungi, the actinobacteria are effective decomposers, breaking down organic matter such as lignin and cellulose at elevated temperatures.

Indoors they are found in house dust and mechanical systems.

1. Crush the ampoule in the bottom of the sterile tube and place swab in tube to moisten.
2. Remove both swabs of the double system and sample the affected surface by rolling both swabs vigorously over the area. Indicate on the chain of custody the surface area sampled in either in² or cm². Assessment samples should be no larger than a 4 x 4 area. Post abatement samples may be larger.
3. Label all samples appropriately and submit to the laboratory for analysis in a timely manner. *Swabs should be refrigerated if the samples are not immediately sent to the lab. A cold pack and cooler should be used during the warm months.

References:

Dillon, H. Kenneth, L. Hung, J. Miller, Field Guide for the Determination of Biological Contaminants in Environmental Samples., 5.2.6.6:61, 7.1: 141-143 (2005).

Draft. Viable Microorganisms Office Environment, OSHA/NIOSH, May 1986.

Burge, H. Et al. Guidelines Assessment and Sampling of Bioaerosols in the Indoor Environment. Bioaerosols Committee of ACGIH, Sept. 1987.

Macher, Janet, Sc.D., M.P.H., Bioaerosols , 7.4.1.2, 18.1.4.2 (1999).