

AIR, Test Code 1059-Total Thermophilic Fungal Count w/ Identification

Thermophilic fungi have a growth range of 20 to 50°C. A building related fungus that falls within this category is *Aspergillus fumigatus* and is the main agent of Aspergillosis in healthcare environments. *Aspergillus* spores are normally found in the air we breathe and typically do not cause illness. The spores are inhaled into the lungs and the fungus will grow and reproduce readily in an individual with a weakened immune system. The individual with a weakened immune system can die very easily from this type of infection.

Aspergillus fumigatus can grow at 25C but it may be overgrown by other fungi at this temperature. Plates are incubated at 25C and 45C allowing the thermotolerant fungi to grow but not the saprophytic room temperature fungi.

The test code 1059 includes thermophilic and mesophilic fungal culture. This is a two plate protocol with two Malt Extract Agar (MEA) plates per site, collected with identical air volume.

1. Calibrate each sampling pump or piece of equipment by following manufacturer's recommendations.
2. Before each run, thoroughly wipe each sampler stage with rubbing alcohol. Allow to dry. Make sure air passages are not blocked.
3. Load and immediately unload one set of sampling media in each sampler to serve as field blanks.
4. Label agar side of plate with identifier. Remove cover from media, load sampling media into sampler, and attach sampler to pump with flexible tubing or if using a SAS sampler screw the top back onto the sampler..NOTE: Take special care to prevent contamination of media during loading and unloading. Do not touch agar surface.
5. **Sample at known preset flow for an accurately known time, e.g., 5 min.** Rotary vane pump should run at 28.3 lpm. (In heavily contaminated areas, sampling time may be adjusted). Collect both MEA plates at identical total air volume.
6. Replace covers on sampling media. Tape plate or place each plate in separate bag, and pack securely for shipment (plates should be media side up).
7. If plates are going to be shipped back to the laboratory send them for overnight delivery in a cooler with an ice pack. If plates are not shipped that day keep the plates in the refrigerator until they are shipped the next day.

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).
NIOSH Manual of Analytical Methods (NMAM), Fourth Edition Method 0800 January 15, 1998.