

Scientific Laboratories, Inc.

Collection of Settled Dust for Semi-Quantitative TEM Analysis

Sampling for settled dust is a simple and rapid method of characterizing surface contaminants as possible asbestos containing dust (ACD). Any building survey or hazard evaluation should include the evaluation of all sources of asbestos. Assessment should include settled dust within both the subject area and any connected air spaces or air handling systems.

The method involves collection of dust from a surface of known area into a TEM air cassette containing an MCE filter (see ASTM D5755 for more detailed information). The results will be given in terms of structures per square centimeter of surface sampled. The dust is collected by "vacuuming" a surface using a short "collection tube" attached to the inlet of a closed face TEM air cassette. The size of the "area of collection" (typically 100 cm² to 1 ft²) can vary from sample to sample depending upon dust load with larger areas required for cleaner surfaces. For example, areas heavily loaded with dust might require collection areas of 100 cm², whereas lightly loaded areas might require up to 900 cm² (929 cm² = 1 ft²). Since the sample will be redeposited during preparation, overloading is not a problem as in air samples. Large pieces of debris should be sampled and analyzed separately since they will overshadow the dust if included with the dust for analysis.

Microvacuum Method - ASTM D5755-95

1. Determine the size of surface area to be sampled and designate or mark the area to be sampled (typically 100 cm² to 1 ft²). It may be physically measured and marked or outlined with a template. In some cases, it may be necessary to collect the sample and then measure the "vacuumed" area, which does not have to be square. Record AREA OF COLLECTION on submittal form.
2. Remove protective plugs from the cassette and attach the hose from the pump to the cassette, OUTLET (see note below on flow rate). The cassette should be a commercially available 25mm or 37mm diameter cassette containing an MCE filter of pore size 0.8µm or less. Clear cassettes can be used to allow a qualitative evaluation of sample load during collection. Static charge will not present a problem since the sample material is rinsed from the cassette and collection tube during preparation.
3. Attach the perpendicularly cut end of a clean collection tube to the cassette INLET. The collection tube should be approximately 1 inch long (25.4mm) with an inside diameter (ID) of 1/4 inch (6.35mm). The collection end should be cut at a 45 degree angle with the other end cut at a 90 degree angle. The collection tube air velocity of 100 cm/s (+10%) is provided at a 2 liter/min flow rate for the 1/4 inch ID tube. If either the tube ID or flow rate is different, the other should be modified accordingly. A commercially available cassette/collection tube combination should be used if possible to insure uniformity of fiber background and assembly conditions.