AAF® INTERNATIONAL *Better Air is Our Business®*

AmericanAirFilter®

SAAF™ Gas-Phase Filtration Media Remaining Life Analysis Testing

Procedure for providing test samples to determine remaining capacity, or life, of chemical filtration media installed in an existing filter system

SAAF TECHNOLOGY

Index

Distributed Separately: Gas-Phase Filtration Media Sample Transmittal Form GPF-9-103

1.0 Introduction

As a service to its customers and its sales representatives AAF International offers testing services to determine the remaining life or capacity of chemical filtration media in installed filter systems. This information can be used to determine the characteristics of an existing filter system, system adequacy, filter replacement schedules, replacement filter ordering schedules, and filter inventory requirements.

2.0 Media Life Analysis Sampling Kit:

A sampling kit is available from AAF. The kit consists of:

1. This procedure with sampling instructions and Gas-Phase Filtration Media sample Transmittal Form GPF-9-103.
2. Three media sample bags
3. Envelope with return label

Contact AAF by tel: **888-223-2003**, fax: **888-223-6500**, or send an email to **saaf@aafintl.com** to obtain sampling kits.

3.0 Media Types and Determination of Remaining Life:

There are generally two basic types of chemical filtration media in use in air cleaning applications. These are as follows:

3.1 Impregnated Chemical Media:

An impregnated chemical media uses a chemical impregnate within the media that is designed to react chemically with the targeted contaminant in the air stream. This reaction results in a chemical change to the contaminant that reduces it to a benign state.

The lifetime of impregnated chemical media is a function of the quantity of un-reacted chemical impregnate remaining in the media. The percentage of available impregnate can be measured in the laboratory and the remaining life can be estimated in terms of the percentage of impregnate remaining. For instance if the test shows that 60% of the impregnate has been used and 40% remains, and that it is known that the media has been operational for 1200 hours, then the remaining life of the media will be calculated as follows:

Total expected life = (1,200 hours / 0.6) x 0.80* = 1,600 hours

*It is impractical to expect to operate a system until 100% of the available impregnate has been utilized since this would probably result in low efficiencies of contaminant removal towards the end of the media's life. For this reason an overall efficiency factor of 80% is applied to obtain the effective life.

Remaining expected life = 1,600 hours – 1,200 hours = 400 hours

This assumes that both the average conditions and the overall range of extremes that have prevailed for the first 1,200 hours of use will continue for the remaining life of the system.

NOTE: It is recommended that a replacement media procurement cycle be initiated when the media has reached a remaining life of 30% or has a remaining life estimate of 2 months or less.

3.2 Virgin Activated Carbon:

Virgin activated carbon captures targeted airborne contaminants through the process of adsorption. Chemical compounds are adsorbed onto the surface of the media and become mechanically bonded to that surface by subatomic forces.

Typical methods to estimate remaining life involve analysis of the media CTC Activity, Butane Activity, or methods correlated to these. The activity of the sample is compared to that of a fresh sample and the remaining life is calculated in a similar fashion to that shown in section 3.1.

4.0 Sampling Frequency:

It is recommended that a sampling regimen be developed on a regular basis. This should begin 30 to 45 working days after the installation of new chemical filtration media and be repeated every three to six months thereafter to develop a linear profile of the system performance.

5.0 Sampling Procedure:

Obtain the media sample(s) in accordance with the instructions contained in Section 9 Gas-Phase Media Sampling Procedure.

6.0 Information to be Supplied:

Complete and return a copy of the Gas-Phase Filtration Media Sample Transmittal Form GPF-9-103, with each individual sample. Mark each sample clearly with a reference number that can be cross referenced to the system and location from which the sample was removed. Any sample returned without the appropriate information will not be processed.

Note: It is mandatory that the sender of the sample supply a name, a phone number and an e-mail address for communication purposes.

7.0 Instructions for Mailing:

Return the samples by overnight courier to:

AAF International
Attn: Lab Services
2624 Weaver Way
Doraville, GA 30340

Mark the exterior of the package with: “Used chemical media sample for analysis.”

Phone: 678.287.8130

Fax: 678.287.8139

8.0 Questions and Inquiries:

All questions regarding this procedure or submitted test sample(s) shall be directed to the Gas-Phase Products Testing Coordinator, tel: 678.287.8130, fax: 678.287.8139, or send an e-mail to rschick@aafintl.com.

9.0 Gas-Phase Media Sampling Procedure

The sample shall be taken directly from a cassette, or from a media bed, that has been located centrally in the air stream and exposed to the full airflow.

If the media is contained in bulk refillable beds use a solid sampling tool specifically made for retrieving samples of granular material. For typical information on such sampling tools go to: http://www.eetcorp.com/products/Sampling_Tools

If the media is installed in cassettes, remove a cassette from the installation. And place the cassette on a table with the sampling ports facing upwards. Some cassettes may be supplied with designated sampling ports, others will have removable fill caps through which samples can be retrieved. In some cases it may be necessary to drill a sampling port into the cassette to retrieve a media sample.

It is critical that the sample shall be representative of all of the media contained within the cassette. It should not be taken exclusively from the ends, edges, or corners of the bed or any location in the cassette that may be considered a “dead spot” or “low flow” area based on the entry airflow arrangement or equipment set-up. It may be necessary to partially or fully empty the cassette to retrieve a representative sample.

Remove a representative sample of the media, completely fill the sample bag (0.5 - 0.7 L), and immediately seal the sample in an AAF sampling bag supplied for this purpose. Complete the information requested on the front of the sampling bag with an indelible marker (see Figure 1). If an AAF sampling bag is not immediately available use any high quality Ziplock® style sampling bag. Remove as much air as possible from the sample before sealing. Double bag the sample in a second Ziplock® style sampling bag and tape the outer bag closed. Mark each sample clearly with a reference number that can be cross referenced to the system and location from which the sample was removed.

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Complete ALL details requested on the Gas-Phase Filtration Media Sample Transmittal Form GPF-9-103, and return to AAF with the sample.

After the sample has been taken refurbish the cassette as follows:

1. Re-fill with any media that was removed from the cassette during the sampling operation.
2. Replace the sample that was removed with an equal amount of unused media to maintain the integrity of the filter by preventing cavities or settling that may result in by-pass of unfiltered air.
3. Replace and properly seal any sample port covers or fill covers that were removed during the sampling process.
4. Add an adhesive label to the cassette and mark it with the following information:
   - SAMPLED CASSETTE – DO NOT RE-SAMPLE"
   - The date that the sample was removed:
   - The name of the person who removed the sample:
5. Replace the cassette in the filter system in accordance with the supplier's instructions and securely seal it in place.

10.0 Gas-Phase Media Sample Bag

Figure 1: SAAF™ Gas-Phase Filtration Media Sample Bag

Attachments:

Gas-Phase Filtration Media Sample Transmittal Form GPF-9-103

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