

**INTERPRETATION IC 52.1-1992-1 OF
ASHRAE STANDARD 52.1-1992
Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used
in General Ventilation for Removing Particle Matter**

Date Approved June 23, 2007

Request from: Philip Winters (pwinters@filtrationgroup.com), Filtration Group, 912 E. Washington St., Joliet, IL 60443.

Reference: This request for interpretation refers to the requirements presented in ASHRAE Standard 52.1-1992, Sections 4 and 12.2.5 and Figure 12-1, regarding dust holding capacity calculations.

Background: In the definition of *dust-holding capacity* (Section 4), it states that:

“Dust is fed until either of these conditions occurs:

- (a) The resistance of the device reaches the rated final resistance.
- (b) Two consecutive arrestance measurements are less than 85% of the maximum arrestance measured during the run. In this case, the dust-holding capacity shall not include dust captured during or after a feed increment in which arrestance has fallen below 85% of the maximum value.
- (c) Arrestance is less than 75% of the peak value.”

However, Section 12.2.5 states that:

"Dust loading shall continue until one of the conditions listed in the definition of dust-holding capacity in Section 4 is met.

For condition (a), where arrestance never falls below 85% of the peak value measured during a test, dust-holding capacity may include a portion of the last increment fed. The allowed portion is calculated by linear interpolation to estimate the weight of dust fed to the time when the final rated resistance was reached.

For condition (b), dust-holding capacity includes all increments through the first two in which arrestances less than 85% of the peak value occurred.

For condition (c), dust-holding capacity includes all increments except the one in which arrestance first fell to less than 75% of the peak value."

Note that the examples given in Figure 12-1 reflect the three cases described in Section 12.2.5, although there is no example of a situation where the arrestance drops below 85% of the peak once and then reaches the rated final resistance.

It is my interpretation that there are two relatively minor errors in this portion of the Standard.

The first error applies to the second sentence in the second condition (b) of the definition of dust-holding capacity, in which it states that "the dust-holding capacity shall not include dust captured during or after a feed increment in which arrestance has fallen below 85% of the maximum value". That sentence is in direct opposition to the text in Section 12.2.5 (b) and in Example 2 of Figure 12-1. As a result, it is my expectation that this sentence is in error and should be removed from the Standard.

The second error occurs in Section 12.2.5 (a), where it states that "arrestance never falls below 85% of the peak value measured during the test". The definition of dust-holding capacity in Section 4 allows the arrestance to drop below 85% of the peak once and still meet the requirements of condition (a). As a result, it is my interpretation that this sentence should read as follows:

"For Condition (a), dust-holding capacity may include a portion of the last increment fed."

The remainder of the text in these sections should remain as written in the existing Standard.

Interpretation: It is my interpretation that for condition (a) in Section 12.2.5, dust-holding capacity may include a portion of the last increment fed regardless of whether or not the arrestance falls below 85% of the peak value measured during a test.

Question: Is this interpretation correct?

Answer: Yes on the first error and No on the second error.

Comments:

- **First Error**
The second sentence in the second condition (b) of the definition is in direct opposition with the text of Section 12.2.5 condition (b) and the calculation examples as you point out. This sentence will be removed during the next publication of the standard. This standard will be revised and submitted for public review during 2007 and this change will be included.
- **Second Error**
In the second paragraph of 12.2.5, the "where arrestance never falls below 85% of the peak value measured during a test" is a modifying clause that limits the use of condition (a) to the situations where the efficiency does not fall below 85% of the peak value at any time during the test. Condition (b) deals with situations where the efficiency does fall below 85% of the peak value and condition (c) deals with the situations where the efficiency does fall below 75% of the peak value.

No changes are deemed necessary in Paragraph 12.2.5