INTERPRETATION IC 52.2-1999-5 OF
ANSI/ASHRAE STANDARD 52.2-1999
Method of Testing General Ventilation Air-Cleaning Devices
for Removal Efficiency by Particle Size

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 52.2-1999, Section 12 and Table 12-1, regarding Minimum Reporting Efficiency Value (MERV) for air cleaners.

Background: Section 12 of ASHRAE Standard 52.2-1999 states the procedures for determining the MERV (Minimum Efficiency Reporting Value) of a filter. To obtain a MERV 11 for a filter, Table 12-1 requires that the efficiency testing must have an E_2 efficiency between 65% and 80% ($65 \leq E_2 < 80$).

Interpolation of ASHRAE Project No. 1088-RP, *Interlaboratory Testing of Filters under ASHRAE Standard 52.2 to Determine the Adequacy of the Apparatus Qualification Tests*, Table 22 indicates that the ASTM E691-99, *Standard Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method,* Repeatability and Reproducibility Standard Deviations (S_r and S_R) at 65% Efficiency are 3.3 and 6.1 respectively. Repeatability refers to variability within a laboratory and Reproducibility refers to variability between labs. These estimates of the variability allow the calculation of confidence limits for the MERV determination.

Interpretation: ASHRAE 1088-RP has generated new information that affects the determination of values generated in ASHRAE Standard 52.2-1999 relative to the absolute efficiency numbers that are MERV boundaries. To have a 95% confidence level that the actual E_2 efficiency is over 65%, an ASHRAE Standard 52.2 test score of greater than $65 + 1.645*S_R$ must be obtained. S_R is the Reproducibility Standard Deviation from ASHRAE 1088-RP. The 1.645 multiplier is used to calculate the 5th percentile of a normal distribution and is used to calculate a 95% lower confidence bound. From ASHRAE 1089-RP, Table 22, for E_2 efficiency levels of 65%, S_R is 6.1. Therefore a test result of, 65 + 10, or 75%, must be obtained to have a 95% confidence that the filter has at least a 65% E_2 efficiency, if the only thing known about the lab is that it participated in this study. Therefore to have 95% confidence that a filter really is a MERV 11 filter, the tested E_2 efficiency must have a measured value of at least 75%.

Question: Is this interpretation correct?

Answer: No.

Comments: The MERV is a reporting value, calculated from the test data of the test. MERV 11 does not mean that the filter is statistically a >65% filter. It is a MERV 11 as defined under the standard based on the measured data of that single specific test. Section 10.6 of the standard addresses the statistical confidence of the data generated for that specific test.

The standard is a method of test, not a method of classifying. A specifying user should add statistical requirements in which he writes his efficiency requirements. This standard does not currently address the statistical confidence of this single test of this filter as it may relate to other tests.