

## Standard Interpretations / High-Efficiency Particulate Air (HEPA) Filters for Vacuum Cleaning.

▪ **Standard Number:** 1910.1001 ; 1926.1101

OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>.

September 6, 1990

MEMORANDUM FOR: REGIONAL ADMINISTRATORS

ATTN: ARA'S FOR TECHNICAL SUPPORT

THRU: LEO CAREY  
Office of Field Programs

FROM: THOMAS J. SHEPICH, Director  
[Directorate of Science, Technology, and Medicine]

SUBJECT: High-Efficiency Particulate Air (HEPA) Filters For Vacuum Cleaning Equipment

We have recently received inquiries regarding "cold" DOP (dioctyl or di-2-ethylhexyl phthalate) aerosol, generated at ambient temperature, and whether it can be used to test vacuum cleaner HEPA filters to meet the requirements as specified in the OSHA asbestos standards 29 CFR 1910.1001 and [29 CFR 1926.1101].

The HEPA filter test method, commonly employed by the nuclear industry and the military, uses a thermally generated monodisperse DOP aerosol as the challenge agent. The mass median particle size for the monodisperse aerosol is 0.3 micrometer, since this size is considered to be the most difficult to remove by the filter media.

The significant difference between "cold" DOP aerosol which is polydisperse and thermally generated bOP aerosol

which is monodisperse is not widely understood. Many distributors and operators of filtration equipment, when specifying filters, do not differentiate between monodisperse and polydisperse DOP testing, believing the reference to "DOP" is all that is needed. The main difference between the "monodisperse" and "polydisperse" aerosol, is the particle size distribution. The geometric standard deviation of a monodisperse aerosol is less than 1.4, while the standard deviation for a polydisperse aerosol usually exceeds 2.0. Consequently, since polydisperse DOP aerosol has a size distribution outside the range of thermally generated monodisperse aerosol, "cold" DOP aerosol is not acceptable for use in testing and certifying the efficiency of HEPA filters.

Please contact [the Directorate of Science, Technology, and Medicine at (202) 693-2300] if you have any questions.

**[Corrected 6/2/2005]**

## UNITED STATES DEPARTMENT OF LABOR

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