



Material Information Sheet

Reference Material

FLT85-1

Filter Media Reference Material for Respiratory Particle Filtration Testing

FLT85-1 is a meltblown nonwoven fabric reference material (RM) with a relative particle filtration efficiency near 0.85 (85 %). This material is intended for the determination of particle filtration efficiency for respiratory protection devices. Reference values for FLT85-1 have been established at the National Research Council of Canada (NRC), as listed in Table 1. A unit of FLT85-1 contains a minimum of twenty individual sheets.

Table 1: Reference values and expanded uncertainties (95 % CI) for FLT85-1

Quantity	Value*
Log-penetration	-0.95 ± 0.22
Particle filtration efficiency (relative)	$0.8573 \pm [+0.0558, -0.0915]$

*Note: The values are obtained at a face velocity of 10 cm/s
Refer to the sections below for additional explanations

Period of validity: until November 2027
Storage conditions: room temperature

Intended use

This material is primarily intended for the determination of particle filtration efficiency for respiratory protection devices.

Preparation of material

This material was acquired in bulk from a commercial supplier in large rolls. The material was cut into roughly 16 x 16 cm square sheets and packaged into amber bags. Each unit contains a minimum of twenty sheets.

Characterization of material

The reference values for FLT85-1 (Table 1) are based on results from data obtained at the NRC using two photometer-based TSI 8130A automated filter testers. The results were generated by testing the material at a face velocity of 10 cm/s and at a minimal loading of sodium chloride.

Homogeneity

The material was tested for homogeneity at the NRC using an automated filter tester and the between-unit and within-unit variability was determined to be negligible.

Stability

The transportation, repeated sampling, and long-term stability of FLT85-1 were assessed using an automated filter tester. For the transportation stability, the effects of various temperatures and relative humidity's on sealed units were assessed for up to four weeks. Additionally, storage of opened units of FLT85-1 under standard laboratory conditions was assessed, which included fluctuations in the relative humidity. The long-term stability of FLT85-1 stored in a sealed bag at room temperature for eight months was assessed and compared to the initial particle filtration efficiency. No differences in the particle filtration efficiency were observed for any of the various testing conditions. Therefore, the results for the transportation, repeated sampling, and long-term stability showed no instability trends.

Uncertainty

The expanded uncertainty (U) for all values corresponds to a 95 % confidence interval (CI) which was obtained either as $U = ku_c$, where u_c is the combined standard uncertainty calculated according to the Joint Committee for Guides in Metrology (JCGM) [1] and k is the coverage factor, or using a Monte Carlo method [2].

Included in the combined uncertainty estimate of the reference values in Table 1 are uncertainties in the batch characterization, uncertainties related to possible between-unit and within-unit variation, and uncertainties related to stability. The batch characterization uncertainty is based on the reproducibility of results observed during several interlaboratory comparisons of particle filtration efficiency [3].

Storage

The material shall be stored at room temperature.

Instructions for handling and use

The sample shall be tested at a face velocity of 10 cm/s and at a minimal sodium chloride loading not exceeding 1.5 mg [3].

Health and safety information

Only qualified personnel should handle the material and appropriate disposal methods should be used. This material is not hazardous. For laboratory use only; not for human consumption, therapeutic, drug, household, or any other uses.

Period of validity

The reference value is valid until November 2027, provided the storage and instructions for handling and use specified in this material information sheet are followed.

Quality Management System

The NRC is Canada's national metrology institute (NMI) and is a signatory of the International Committee for Weights and Measures Mutual Recognition Arrangement (CIPM MRA). The CIPM MRA was developed in a response to a growing need for an open, transparent, and comprehensive scheme to give users reliable quantitative information on the comparability of national metrology services and to provide the technical basis for wider agreements negotiated for international trade, commerce, and regulatory affairs. Our Quality Management System for measurement services and certified reference materials conforms to the requirements of ISO/IEC 17025 and ISO 17034.

Description of terms

Reference values are those for which not all uncertainty contributions may have been fully investigated or metrological traceability has not been fully established by the NRC.

Supplemental information

Bibliographic information and any additional technical supplemental information is available at [10.4224/crm.2025.flt85-1](https://doi.org/10.4224/crm.2025.flt85-1).

References

1. JCGM 100:2008. Evaluation of measurement data – Guide to the expression of uncertainty in measurement. Joint Committee for Guides in Metrology (JCGM); 2008. <https://doi.org/10.59161/JCGM100-2008E>
2. JCGM 101:2008. Evaluation of measurement data – Supplement 1 to the “Guide to the expression of uncertainty in measurement” – Propagation of distributions using a Monte Carlo method. Joint Committee for Guides in Metrology (JCGM); 2008. <https://doi.org/10.59161/JCGM101-2008>
3. Sipkens TA, Mehri R, Perez Calderon R, Green RG, Oldershaw A, Smallwood G. Interlaboratory comparison of particle filtration efficiency testing equipment. J Occup Environ Hyg. 2025: 1-15. <https://doi.org/10.1080/15459624.2024.2447321>

Authorship

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This material information sheet is only valid if the corresponding material was obtained directly from the NRC or an authorized reseller. Users should ensure that the material information sheet they have is current. For updates, please refer to [10.4224/crm.2025.ft85-1](https://www.nrc.ca/10.4224/crm.2025.ft85-1).

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