The Committee for Conformity Assessment of Accreditation and Certification on Functional and Technical Textiles
Specified Requirements of Disposable Dust Respirators with Activated-Carbon
Document No. FTTS-FP-102e
Last revised date : April 27, 2005

1.Scope：

This standard specifies requirements for disposable dust respirators intended to provide protection against atmospheres containing substances which may be harmful if breathed by the wearer(we denominate mask following-mentioned)。The requirements does not apply to respirators which can exchange separable parts and filter of CNS 6637〔Facepieces Mask〕，and does not apply to ambient atmospheres containing oil。This standard is suitable for the disposable dust respirators which can purify the operating environment where contain particles and low concentration, and low pressure air. The disposable dust respirators are not suitable for CNS6637 and CNS6636 or the operating environment's air has oil.

2.Terminology：

Except the board diction of this standard according to CNS 14254,other dictions as follows:

2.1 Protection efficiency：The specified flow rate is passed through the mask and the ratio of the aerosol concentration of before and after the mask。

2.2 Inhalation resistance of rated airflow：When a continuous stream of air passing through mask at specified flow rate of inhalation direction, the resistance imposed by mask 。

2.3 Exhalation resistance of rated airflow：When a continuous stream of air passing through mask at specified flow rate of exhalation direction, the resistance imposed by mask 。

2.4 Dust loading： The dust which is defined by the standard make the mask answer to the standard, The mask's capacity of the dust loading.

3.Performance specification：

Table1.Protection Efficiency Grade

(Grade)	.Protection Efficiency%	Inhalation resistance Pa｛㎜ H_2O｝	Exhalation resistance Pa｛㎜ H_2O｝	Classification
A	≥99	≤350｛35｝	≤250｛25｝	Excellent
B	≥ 95	≤350｛35｝	≤250｛25｝	Very good
C	≥80	≤190｛19｝	≤190｛19｝	Good
D	≥70	≤90｛19｝	≤190｛19｝	Moderate

Note 1：The A、B grade of disposable dust masks must be passed loading test before the masks be classified. If the protection efficiency of all three loading test increases or flattens with time, it just meet this requirements, If not, it just not meet this requirements。

Note 2：All of the test data should conform to the certification of this standard.

4.Test method（Summary）：

4.1 Preconditions：The 13 masks to be tested shall be taken out of their packaging and placed in an environment of 85±5 % relative humidity at 38±2 ℃ for 25±1 hours. Following the preconditions, mask shall be sealed in a gas-tight container and tested within 10 hours.

4.2 Breathing resistance test ：The 10 masks to be tested shall be taken out of their packaging and shall be tested for inhalation and exhalation resistance in an environment of 30±10% relative humidity at a continuous airflow rate of 85±4 L/min。。（In accordance with CNS 14755 7.1）

4.3 Protection efficiency test：The 10 masks to be tested shall be taken out of their packaging and shall be done in accordance with Table 2 of the specified test conditions. The test aerosol of the specified flowrate is passed through the mask and the aerosol concentration is measured immediately before and after the mask by a particle counter, The protection efficiency can be calculated in accordance with the following formula：（In accordance with CNS 14755 7.2）

$$PE = \frac{C_0 - C_i}{C_0} \times 100\%$$

PE：Protection efficiency (%)

C_0：Aerosol concentration before the mask(mg/m^3，or numbers/mL)

C_1：Aerosol concentration after the mask (mg/m^3，or numbers/mL)

Table 2.The testing condition of the protection efficiency

Aerosol type	Sodium chloride（NaCl）：Count mean diameter（CMD）0.075±0.020 μm，Geometric standard deviation（GSD）＜1.86
Aerosol electronics	Boltzmann equilibrium state
Aerosol average concentration	＜200 mg/m^3
Temperature	25±5 ℃
Relative humidity	30±10 %
Airflow rate	85±4 L/min
Testing time	The testing time of each mask has between 2 minutes and 4 minutes, then each mask is measured exceeding one minute

4.4 Loading test：The 3 masks to be tested shall be taken out of their packaging and placed in an environment of 85±5 % relative humidity at 38±2 ℃ for 25±1 hours. Following the pre-conditioned mask shall be sealed in a gas-tight container and tested within 10 hours. The mask shall be done loading test in an environment of 30±10% relative humidity at a continuous airflow rate of 85±4 L/min. The mask placed in the holder and closed the holder. When the tester closed the holder, the loading test begun automatically, then make adjustments to the specified flow rate as the test begun. When the 200㎎ is reached, the test is finished and recorded the mask of protection efficiency in the testing process.

4.5 Absorption capacity test：The 5 masks to be tested shall be taken out of their packaging and placed in an environment of 85±5 % relative humidity at 38±2 ℃ for 25±1 hours. Following the pre-conditioned mask shall be sealed in a gas-tight container and tested within 10 hours.The test shall comply with the appropriate test conditions for the given in Table 3.The gas shall be passed through the mask ,and measured gas concentration which has passed the mask ,then recorded breakthrough time。

Table 3 Absorption capacity test conditions

Gas type	hexamethylene
Gas concentration	50 p.p.m.
Maximum allowable breakthrough concentration	5 p.p.m.
Test temperature	25±5 ℃
Relative humidity	70±5 %
Test gas flowrate	30±1 L/min

5.Reference standard：

CNS 14755-2003	Disposable Dust Respirators
NIOSH 42CFR84-1997	Non-Powered Air-Purifying Particulate Respirators
EN 149-2001	Respiratory Protective Devices-Filtering Half Mask to Protect Against Particles-Requirements, Testing, Marking
AS/NZS 1716-1994	Respiratory Protective Devices