

## EN 779:2002

(E) Table 1 – Classification of air filters according to EN 779

Class	Final pressure drop Pa	Average arrestance (Am) of synthetic dust %	Average efficiency (Em) of 0.4 µm particles %
G1	250	$50 \leq Am < 65$	
G2	250	$65 \leq Am < 80$	
G3	250	$80 \leq Am < 90$	
G4	250	$90 \leq Am$	
F5	450		$40 \leq Em < 60$
F6	450		$60 \leq Em < 80$
F7	450		$80 \leq Em < 90$
F8	450		$90 \leq Em < 95$
F9	450		$95 \leq Em$

NOTE The characteristics of atmospheric dust vary widely in comparison with those of the synthetic loading dust used in the tests. Because of this the test results do not provide a basis for predicting either operational performance or life. Loss of media charge or shedding of particles or fibers can also adversely affect efficiency (see annexes A and B).

## 7 Test rig and equipment

### 7.1 Test conditions

Room air or outdoor air may be used as the test air source. Relative humidity shall be less than 75 %. The exhaust flow may be discharged outdoors, indoors or recirculated. Requirements of certain measuring equipment may impose limits on the temperature of the test air.

Filtration of the exhaust flow is recommended when test aerosol and loading dust may be present.

### 7.2 Test rig

The test rig (see Figure 1) consists of several square duct sections with 610 mm x 610 mm nominal inner dimensions except for the section where the filter is installed. This section has nominal inner dimensions between 616 mm and 626 mm. The length of this duct section shall be at least 1,1 times the length of the filter, with a minimum length of 1 m.

The duct material shall be electrically conductive and electrically grounded, have a smooth interior finish and be sufficiently rigid to maintain its shape at the operating pressure. Smaller parts of the test duct could be made in glass or plastic to see the filter and equipment. Provision of windows to allow monitoring of test progress is desirable.

HEPA filters may be placed upstream of section 1, in which the aerosol for efficiency testing is dispersed and mixed to create a uniform concentration upstream the filler.

Section 2 includes in the upstream section the mixing orifice (10) in the centre of which the dust feeder discharge nozzle is located. Downstream of the dust feeder is a perforated plate (11) intended to achieve a uniform dust distribution. In the last third of this duct is the upstream aerosol sampling head. For arrestance tests, this sampling head shall be blanked off or removed.

# AIRCLEANNESS STANDARDS FOR CONTROLLED ENVIRONMENTS

Maximum Number of Particles/M<sup>3</sup> Equal To or Greater Than the Stated Size

CLASS	PARTICLE SIZE									
	0.1um	0.2um	0.3um	0.5um	1um	5um	10um	25um		
<b>INTERNATIONAL ISO 14644-1</b>										
1	10	2								
2	100	24	10	4						
3	1000	237	102	35	8					
4	10000	2370	1020	352	83					
5	100000	23700	10200	3520	832	29				
6	1000000	237000	102000	35200	8320	293				
7				352000	83200	2930				
8				3520000	832000	29300				
9				35200000	8320000	293000				
<b>UF FED. STD 209E</b>										
S.I	English									
M1			350	75.7	30.9	10				
M1.5		1	1,240	265	106	35.3				
M2			3500	757	309	100				
M2.5		10	12400	2650	1060	353				
M3			35000	7570	3090	1000				
M3.5		100		26500	10600	3530				
M4				75700	30900	10000				
M4.5		1000				35300		247		
M5						100000		618		
M5.5		10000				353000		2470		
M6						1000000		6180		
M6.5		100000				3530000		24700		
M7						10000000		61800		
<b>BRITISH STD. BS5295</b>										
C					100	35		0		
D					1000	350		0		
E					10000	3500		0		
F						3500		0		
G					100000	35000		200	0	
H						35000		200	0	
J						350000		2000	450	0
K						3500000		20000	4500	500
L								200000	45000	5000
M									450000	50000
<b>EUROPEAN UNION GMP GUIDELINE (ANNEX I) AT REST IN OPERATION</b>										
Room Grade	Maximum permitted number of particles per m <sup>3</sup> equal to or above									
	0.5um			5um			0.5um		5um	
A	3500			1			3500		1	
B	3500			1			350000		2000	
C	350000			2000			3500000		20000	
D	3500000			20000			Not defined		Not defined	