



The new standard BS EN 779:2012

Filtration of outdoor or recirculation air will reduce the level of pollutants in the air. The basic technology is to pass air through a filter, which retains the pollutant and then to distribute the filtered air in the vicinity of the people, the product or the process in the building. There is a wide range of filter types to perform this duty, such as pocket filters, compact filters, deep-pleated and mini-pleat filters, filter pads and cells. All those filters are categorized under 'Air filters for general ventilation'.

Testing and standardized test methods for ventilation filters go back for more than 4 decades. Since the first introduction in 1993, the European standard EN779 provides a uniform method of testing and classification. The standard was first updated in 2002 and now in 2012 the second revision has finally been adopted by CEN and will soon be published by NEN as NEN EN 779:2012.

The 2002 revision introduced the laser particle counter and DEHS aerosol charge for the determination of the efficiency values, an important change that accelerated the entire test procedure and dramatically reduced the cost for testing. It also introduced the mandatory determination of the discharge behaviour of passive electrostatic charged filter media; however no consequences were attached to this determination of discharge.

With the introduction of the 2012 revision we are now addressing this shortfall of the previous standard. The consequence of reported low discharge values for the efficiency may result in disqualification of the filter for classification as additional requirements for minimum efficiency are added. This brings the standard one step further from being a pure comparative test standard – how product A performs compared to product B – into a real performance standard.

With the growing importance of indoor air quality (IAQ) it is good to know what the minimum efficiency of a filter is on sub-micron particles; particles which directly harm the human health.

Filter Group	EN 779 Class	Average Arrestance (Am -%)	Average Efficiency (Em 0.4 µm -%)	Final Test Pressure Drop (Pa)	Minimum Efficiency (ME 0.4 µm -%)
Coarse	G1	$50 \leq A_m \leq 65$	-	250	-
	G2	$65 \leq A_m \leq 80$	-	250	-
	G3	$80 \leq A_m \leq 90$	-	250	-
	G4	$90 \leq A_m$	-	250	-
Medium	M5	-	$40 \leq E_m \leq 60$	450	-
	M6	-	$60 \leq E_m \leq 80$	450	-
Fine	F7	-	$80 \leq E_m \leq 90$	450	35
	F8	-	$90 \leq E_m \leq 95$	450	55
	F9	-	$95 \leq E_m$	450	70

Filter classification to EN779:2012

The 2012 revision introduces two small but important changes.

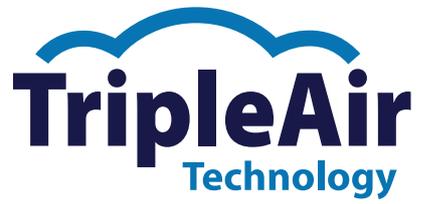
For fine filters in the class F7 to F9 a minimum efficiency (ME) is introduced as additional criteria to qualify for classification. Minimum efficiency is the lowest measured value during three test stages:

- Initial efficiency of a new , unloaded filter
- Discharged efficiency of a new, unloaded filter (all electrostatic charges removed)
- Loaded efficiency of a filter, progressively exposed to the standardized ASHRAE test dust (Thus also observing possible breakthrough of dust)

With the introduction of the minimum efficiency (ME) a value is introduced which guarantees the real life performance under all conditions, provided the filter is not damaged and used at the agreed airflow rate. Such a minimum value is already known from the testing of HEPA and ULPA filters.

The additional requirement will disqualify inferior media, which only depends on electrostatic charges and will enforce the use of quality media for fine filter filtration and IAQ.

Not meeting the ME values from above table, while meeting the average efficiency has been met, means that filter will be classified automatically into the lower M class.



The former F5 and F6 filters, mainly used as prefilter or for industrial processes, are now regrouped into a separate Medium (M) class, which does not require determination of the minimum efficiency.