

**European Standard for EPA, HEPA & ULPA Filters**

**Procedure**

- On a flat sheet of media, the MPPS is determined for the given media velocity. This can be done with a laser spectrometer or a combination of electrostatic classifier and CNC (Condensed Nucleus Counter).
- The filter is assembled with the specified media grade and amount of media to comply with the defined media velocity.
- The filter is challenged with an aerosol and at the MPPS both the local and overall efficiency are determined with either a CNC or laser spectrometer.
- Leaks are specified as maximum allowable local penetration at the MPPS and must not exceed 5 x the overall penetration.
- The filter is classified according to the test results in the range E10 - E12 for EPA, H13 - H14 for HEPA, U15 - U17 for ULPA.

**Filter Classification**

Efficiency (%) at the MPPS		Penetration (%) at the MPPS	
Overall Value	Local Value	Overall Value	Local Value
E10	>	85	-
E11	>	95	-
E12	>	99,5	-
H13	>	99,95	99,75
H14	>	99,995	99,975

U15	>	99,9995	99,9975
-----	---	---------	---------

0

U16	>	99,99995	99,99975
-----	---	----------	----------

0

U17	>	99,999995	99,9999
-----	---	-----------	---------

0

**Notes:**

- Filters in the class E10, E11 and E12 do not require verification of local penetration.
- Filters in the classification H13 and H14 may, as an alternative, be verified with the visual oil-smoke test (previously known as DIN 24.184), which is accepted as equal or more searching than the specified local penetration.
- U17 is an exception to the rule. In this case local penetration may not exceed 20 x the overall penetration value.