Title testing filters for Din EN 779 compliance at ILK Dresden

The **ILK Dresden** is an independent and free research enterprise with the legal status of a non-profit limited liability company.

With its staff of 140, the **ILK Dresden** conducts industry-related research, development and technology transfer in the wide range of air handling and refrigeration technologies and their applications including related scientific and technical fields

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Check of particulate air filters for general ventilation acc. to DIN EN 779 or ANSI/ ASHRAE Standard 52.2.

SERVICE SPECTRUM:

- test of pressure loss, separation and dust accumulation behavior of particulate air filters of general ventilation acc. to European or American standard
- test and classification of particulate air filters in the filter classes G1 to G4 (coarse filters), M5 to M6 (medium filters) and F7 to F9 (fine filters) acc. to DIN EN 779 / test wirh test dust ASHRAE 52.1 and the test aerosol DEHS
- test and classification of particulate air filters in the filter classes MERV1 to MERV16 acc. to ANSI/ ASHRAE STANDARD 52.2. / test with the test dust ASHRAE 52.1 and the test aerosol KCL
- test report in German and/ or English language

TEST CONDITIONS:

- free flow cross- section: 630 mm x 630 mm
- ambient air or prefiltered indoor air by filtration stages with air-, charcoal- and HEPA- filter
- air conditioning with air heating and humidifying
- temperature range : 23 °C ± 5 K
- range of relative air humidity : 50 % ± 15 %,
- volumetric flow range : 850 $m^3 \cdot h^{-1}$(0,236 $m^3 \cdot s^{-1}$) - 3400 $m^3 \cdot h^{-1}$(0,944 $m^3 \cdot s^{-1}$)
- final pressure loss : max. 1000 Pa
- dust concentration : 70 $mg \cdot m^{-3}$

DUST AND AEROSOL METERING:

- dust metering: ASHRAE Dust disperser SAG440, Topas GmbH
- aerosol metering: DEHS - ATM 225 for DEHS, Topas GmbH
- aerosol metering: KCl - LPAG 8108 TSI Inc.

DUST AND AEROSOL MEASUREMENT:

- dust measurement: plane filer sampling unit, Paul Gothe company
- aerosol measurement: aerosol spectrometer APS 3321 and SMPS 3936 system, TSI Inc

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Title : Camfil analysis of EN 779.2012

EN779:2012

The new standard forces air filters to perform better

At Camfil, we have always put every effort into improving indoor environments. Thus, no one is more pleased than us that, from 2012, a new air filter standard imposes tougher requirements. Unfortunately, the requirements are not as tough as we would have liked. For example, our Hi-Flo XLT7 (a class F7 filter) has a minimum filtration efficiency of 54 percent. For an F7 filter, the new standard requires no more than 35 percent. However, that does not meet the quality levels we have set for ourselves. Indeed, our development of the market's most efficient, energyoptimised filters will continue.

What does EN779:2012 do?

The new European standard for air filters (EN779:2012) comes into force in 2012. Its purpose is to classify air filters based on their lowest filtration efficiency. This latter is also referred to as minimum efficiency (ME). The standard is an initiative that we welcome and a step towards better indoor environments.

The new standard will help to eradicate a number of problems. One of these is presented by electrostatic charged synthetic filters. While such filters can demonstrate good initial filtration efficiency, they discharge extremely rapidly. This entails a considerable deterioration in their air cleaning ability.

Unfortunately, one result of the foregoing is that far too many European properties are now using F7 class filters that have ME values of between 5 and 10 percent. This means that as much as 90 to 95 percent of the contaminants in the outdoor air find their way into buildings and pollute the indoor environment.

By basing classification on ME value, the new standard will force these filters out of the market. At the same time, it will contribute to the development of synthetic filter materials offering considerably higher particle separation. Regrettably, the price for this will include higher pressure drops and increased energy consumption.

Not all filters are the same
– even when they are in the same class!

The problem with the new classification is that, although the worst filters will vanish from the market, there is room for good filters to be made worse. Although energy savings can be achieved by having the lowest possible pressure drop, such development could be retrograde. For example, with 0.4 µm particles, our Hi-Flo XLT7 (class F7) filter has an ME value of a full 54 percent. However, for classification as an F7 filter, the standard requires no more than 35 percent.

As we have already made clear, we will not be lowering the efficiency of our Hi-Flo filters. That would result in an approximately 40 percent worsening of air quality. However, there is a risk that other manufacturers will not think the same way. Instead, they may see the standard as an opportunity to reduce pressure drop and, thereby, energy consumption. This will result in poorer air quality.

Classification of air filters[1)]					
Group	Class	Final pressure drop (test) Pa	Average arrestance (Am) of synthetic dust %	Average efficiency (Em) for 0.4 µm particles %	
Coarse	G1	250	50≤Am<65	-	-
	G2	250	65≤Am<80	-	-
	G3	250	80≤Am<90	-	-
	G4	250	90≤Am	-	-
Medium	**M5**	450	-	40≤Em<60	-

Classification of air filters[1)]					
Group	Class	Final pressure drop (test) Pa	Average arrestance (Am) of synthetic dust %	Average efficiency (Em) for 0.4 µm particles %	
	M6	450	-	60≤Em<80	-
Fine	F7	450	-	80≤Em<90	**35**
	F8	450	-	90≤Em<95	**55**
	F9	450	-	95≤Em	**70**

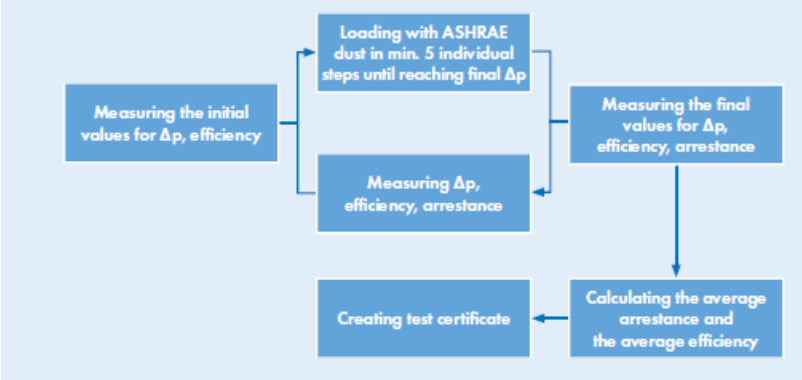
NOTE
[1)] The characteristics of atmospheric dust vary widely in comparison with those of the synthetic loading dust used in the tests. Because of this, the test results do not provide a basis for predicting either operational performance or service life. Loss of media charge or shedding of particles or fibres can also adversely affect efficiency. [2)]Minimum efficiency is the lowest of any of the following three values: initial efficiency, discharged efficiency or efficiency throughout the test's loading procedure.

Title : Freudenberg analysis of Din

Summary and then link to pdf

Power point

Title Din 779 test procedure according to Freudenberg



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