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Test Report

No. 3.2-42/99 dated 01.08.2000

Indoor Air Hygiene Test of an Indoor Air Purifier and Humidifier Suitable for Allergy Sufferers

- I Client** PLASTON AG, Widnau (Switzerland)
- II Test object** Indoor air purifier and humidifier with HEPA filter element, evaporator cartridge and activated carbon filter
Type designation of the unit: AOS 2071
- III Type of test**
- Determination of the emissions produced by the unit when correctly used (respirable fine particulates, house dust, mould, allergens and tobacco smoke) for the assessment of its influence in terms of indoor air hygiene (air purification performance)
 - Examination of the unit with air humidification in continuous operation with respect to germ formation and humidification performance
- IV Testing equipment**
- Test room 40 m³
 - Testing procedure and measuring instruments: VDI 2066, VDI 2265, DIN EN ISO 9237, DIN 24184, DIN EN 1822, DIN EN 481, DIN ISO 7708
 - Allergenic and germ analysis: ELISA test, microscopy
- V Test period (basic tests)** May 2000 to August 2000

VI Test results

VI.a	Air throughput	<ul style="list-style-type: none"> • Setting 1 • Setting 2 • Setting 3 	<p>83.7 m³/h</p> <p>135.1 m³/h</p> <p>214.2 m³/h</p>
VI.b	Removal efficiency for particulates (Setting 2)	<ul style="list-style-type: none"> • Test particulates AC-fine (1 mg/m³) • House dust (1 mg/m³): floor sediments < 100 µm • Indoor air particulates (75 µg/m³): 1/3 soot, 1/3 mineral particulates, 1/3 biogenic aerosols • Respirable fine particulates (<7 µm): from house dust and indoor air particulates 	<p>99.7 %</p> <p>99.8 %</p> <p>99.0 %</p> <p>98.3 %</p>
VI.c	Removal efficiency for pathogenic air constituents (Setting 2)	<ul style="list-style-type: none"> • Mould (420 cfu/m³)¹⁾ • Mite allergens Der pI²⁾ and Der fI³⁾ (10 µg/g house dust) • Pollen allergen (birch, Bet VI) • Tobacco smoke 	<p>100 %</p> <p>99.0 %</p> <p>100 %</p> <p>98.0 %</p>
	Pollutant reduction after 1 hour operating time in the 40 m ³ test room (100 µg/m ³ aerosol according to DIN EN 1822)		98.0 %
VI.d	Measuring results after 3 months operating time (23 °C, Rh = 60 %)		
	<ul style="list-style-type: none"> • Mould/germ penetrations of HEPA filter • Germ formation in evaporator cartridge⁴⁾ • Germ formation in humidifier water⁴⁾ • Other internal germ formation or germ emissions⁴⁾ • Clogging of HEPA filter • Probable service life of HEPA filter (Setting 2) 	<p>none</p> <p>none</p> <p>none</p> <p>none</p> <p>appr. 15 %</p> <p>appr. 1.5 years</p>	

¹⁾ cfu: colony-forming units

²⁾ Der pI: major allergen of the mite dermatophagoides pteronyssinus

³⁾ Der fI: major allergen of the mite dermatophagoides farinae

⁴⁾ With regular cleaning as per operating manual

VII Evaluation of results

The results show, that if the indoor air purifier and humidifier AOS 2071 is correctly used it stays below all currently known threshold values which set off medical or allergic reactions and does this even in rooms highly contaminated with pathogenic, particulate air constituents.

Taking the pollution levels normally encountered in rooms and the environment, e.g.

- 20 to 100 µg particulates / m³ air,
- 10 to 50 ng allergens / m³ air and
- 100 to 500 mould spores / m³ air

the indoor air purifier and humidifier AOS 2071 emits less than

- 0,5 µg particulates / m³ air or
- 0,5 ng allergens / m³ air and
- no mould spores.

With a room volume of, for example, 100 m³ - equivalent to a floor area of approx. 40 m² - the unit circulates the entire air volume in the room at setting 3, i.e. it purifies and humidifies it twice an hour. Consequently, depending on the ventilation conditions (supply of outside air), the pollutant level in the indoor air will approach the air quality specified by the indoor air purifier and humidifier AOS 2071 after a number of hours.

If an air change of ≥ 0.3 per hour is maintained - which is beneficial to the user's well-being - the relative humidity in the room will remain below 60% even with the unit in continuous operation.

On the basis of these test results PLASTON AG, Widnau (Switzerland), is hereby granted permission by RWTÜV, Essen, to use the RWTÜV test mark "Indoor Air Test for Allergenic Suitability" for the indoor air purifier and humidifier with the type designation AOS 2071.

It is an absolute necessity to maintain the indoor air purifier and humidifier AOS 2071 and its operation in a hygienically perfect condition. Therefore, the cleaning instructions and replacement intervals laid down in the operating manual for the HEPA filter and evaporator cartridge need to be complied with.

VIII Conditions for use of the RWTÜV test mark

- VIII.1 PLASTON AG, Widnau (Switzerland), is granted permission to use the RWTÜV test mark "**Indoor Air Hygiene Test for Allergenic Suitability**". This permission applies only to the version of the indoor air purifier and humidifier bearing the type designation AOS 2071.
- VIII.2 The indoor air purifier tested is documented by the test specimen deposited at the testing institute.
- VIII.3 Maintenance of the technical state and indoor air hygiene performance features of the indoor air purifier will be checked by RWTÜV in a periodic inspection conducted at least once a year.
- VIII.4 RWTÜV will take the test specimen for the periodic inspections from ongoing production or a store without prior notice.
- VIII.5 To maintain the approval for use of the RWTÜV test mark "**Indoor Air Hygiene Test for Allergenic Suitability**" the periodic inspections must be concluded with a positive result.

RWTÜV Anlagentechnik GmbH
Testing Laboratory for Indoor Air Hygiene

Essen, 01 August 2000



Dipl.-Ing. R. Schüler



CERTIFICATE

Permission to use the Test Mark

*INDOOR AIR HYGIENE TEST
FOR ALLERGENIC SUITABILITY*

RWTÜV Anlagentechnik GmbH, Essen

hereby confirms that the indoor air purifier and humidifier

AOS 2071

conforms to the requirements
of RWTÜV Anlagentechnik GmbH.

PLASTON AG, Widnau, (Switzerland)

is therefore granted the right to use the test mark shown below
in connection with the above product.

RWTÜV Anlagentechnik GmbH

Testing Laboratory for Indoor Air Hygiene

Dipl.-Ing. R. Schüler

Essen, 01 August 2000

