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TÜV®

TEST REPORT

No. SEG-889/10 of 14.03.2011

INDOOR AIR HYGIENE TEST OF AN INDOOR AIR PURIFIER REGARDING SUITABILITY FOR ALLERGIC PEOPLE

- | | |
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| I Customer | Daikin Europe N. V., Oostende (Belgium) |
| II Test Product | Indoor air purifier
Trade name of the product:
Air Purifier MC70LVM |
| III Purpose of Tests | <ul style="list-style-type: none">• Determination of indoor air cleaning performance of the unit for dust, mould spores, bacteria and allergens• Ascertainment of the ozone emission rate |
| IV Test Equipment | <ul style="list-style-type: none">• Testing room 40 m³• Testing methods / measuring instruments: VDI 2066, VDI 2265, VDI 3489, DIN EN 481, DIN EN 779, DIN EN 1822, DIN ISO 7708, DIN EN ISO 5167, TRGS 402 and 403, RAL-ZU 122• Germ analysis: microscopy• Allergen analysis: ELISA-Test |
| V Test Period
(basic tests) | October 2010 to March 2011 |

The present test report may not be published, even in part, without the written approval of TÜV NORD Systems GmbH & Co. KG.

VI Test Results

VI.1 Air flow rates, electric power consumption and sound power levels

Parameter		Power setting				
		Quiet	Low	Standard	High	Turbo
Air flow rate	[m ³ /h]	58	127	204	282	416
Electric power input	[W]	7,8	10,0	15,5	24,9	61,5
Sound power level	[dB(A)]	31,0	37,7	46,7	53,7	62,6

VI.2 Retention efficiencies regarding indoor air dust at "High" power setting

• Retention efficiency at 0.3 µm	80.52 %
• Retention efficiency at 0.5 µm	84.20 %
• Retention efficiency at 0.7 µm	90.11 %
• Retention efficiency at 1.0µm	93.90 %
• Retention efficiency at 1.5 µm	97.01 %
• Retention efficiency at 2.0 µm	97.93 %
• Retention efficiency at 2.5 µm	98.34 %
• Retention efficiency at 3.0 µm	98.87 %
• Retention efficiency at 3.5 µm	98.95 %
• Retention efficiency at 4.0 µm	99.52 %
• Retention efficiency at 5.0 µm	98.93 %
• Retention efficiency at 6.0 µm	98.85 %
• Retention efficiency at 7.0 µm	99.28 %
• Retention efficiency at 8.0 µm	96.88 %
• Retention efficiency at 9.0 µm	99.19 %
• Retention efficiency at 10.0 µm	98.24 %
• Total retention efficiency at 0.3 µm to 7 µm (respirable dust fraction)	95.99 %
• Total retention efficiency at 0.3 µm to 10 µm	97.75 %

VI.3 Retention efficiencies of test dust A2 acc. to ISO 12103-1 at "Standard" power setting

• 1st loading stage (dust feeding: 1 g/h)	
- Mean retention efficiency for particles from 0.3 µm to 7 µm	99.81 %
- Mean retention efficiency for particles from 0.3 µm to 10 µm	99.95 %
• 2nd loading stage (dust feeding: 1 g/h)	
- Mean retention efficiency for particles from 0.3 µm to 7 µm	99.75 %
- Mean retention efficiency for particles from 0.3 µm to 10 µm	99.93 %

VI.4 Retention of bacteria and mite allergens from house dust at "Standard" power setting

• 1st loading stage (dust feeding: 1 g/h)	
- Mean retention efficiency for bacteria	99.6 %
- Emission of mite allergens	≤ 0.2 ng/m ³
• 2nd loading stage (dust feeding: 1 g/h)	
- Mean retention efficiency for bacteria	99.5 %
- Emission of mite allergens	≤ 0.2 ng/m ³

VI.5 Retention efficiency regarding spores from pure mould cultures at "Standard" power setting

Mean retention efficiency for Penicillium and Cladosporium spores	93.1 %
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VI.6 Retention efficiencies regarding indoor air dust and mould spores in a long-term test at "Standard" power setting

- **Retention efficiencies at the start of the test**
 - Retention efficiency for particles from 0.3 µm to 7 µm 96.23 %
 - Retention efficiency for particles from 0.3 µm to 10 µm 99.11 %
 - Retention efficiency for mould spores 93.9 %
- **Retention efficiencies after an operation time of 3 weeks**
 - Retention efficiency for particles from 0.3 µm to 7 µm 91.88 %
 - Retention efficiency for particles from 0.3 µm to 10 µm 97.37 %
 - Retention efficiency for mould spores 86.7 %
- **Retention efficiencies after an operation time of 6 weeks**
 - Retention efficiency for particles from 0.3 µm to 7 µm 90.92 %
 - Retention efficiency for particles from 0.3 µm to 10 µm 97.32 %
 - Retention efficiency for mould spores 82.0 %
- **Retention efficiencies after an operation time of 9 weeks**
 - Retention efficiency for particles from 0.3 µm to 7 µm 92.10 %
 - Retention efficiency for particles from 0.3 µm to 10 µm 95.24 %
 - Retention efficiency for mould spores 77.1 %
- **Retention efficiencies after an operation time of 12 weeks**
 - Retention efficiency for particles from 0.3 µm to 7 µm 90.47 %
 - Retention efficiency for particles from 0.3 µm to 10 µm 97.54 %
 - Retention efficiency for mould spores 90.0 %
- **Mean Retention efficiencies during the whole operation time**
 - Mean retention efficiency for particles from 0.3 µm to 7 µm 92.32 %
 - Mean retention efficiency for particles from 0.3 µm to 10 µm 97.32 %
 - Mean retention efficiency for mould spores 85.9 %

VI.7 Germ colonisation on the clean air side at the end of the 12 weeks long-term test

After the 12 weeks long-term operation no germs were found at the air outlet of the unit.

VI.8 Measurement of the ozone emission

The ozone emission of the unit in a test room of 24 m³ was determined as 11.8 µg/m³.

VII Evaluation of the test results

The TÜV NORD test mark "**Indoor Air Hygiene Test – Suitable for Allergic People**" is only granted for use, if an indoor air purifier fulfils the following criteria:

- Deviation from specified ventilation and electrical data ≤ 5 %
- Deviation from specified sound power levels ≤ 2 dB
- Total retention efficiency for indoor air dust particles from 0.3 µm to 7 µm ≥ 90 %
- Total retention efficiency for indoor air dust particles from 0.3 µm to 10 µm ≥ 95 %
- Total retention efficiency for test dust A2 particles from 0.3 µm to 7 µm ≥ 96 %
- Total retention efficiency for test dust A2 particles from 0.3 µm to 10 µm ≥ 98 %
- Retention efficiency for mould spores ≥ 85 %
- Retention efficiency for bacteria ≥ 95 %
- Clean air allergen content in tests with prepared house dust < 1 ng/m³
- Germ colonisation on the clean air side of the unit after 12 weeks operation ... none
- Ozone emission < 15 µg/m³

The Daikin air purifier **MC70LVM** meets these requirements as documented in section VI of the present test report.

On the basis of these test results, Daikin Europe N. V., Oostende (Belgium), was granted permission by TÜV NORD, Hamburg (Germany), to use the TÜV NORD test mark "Indoor Air Hygiene Test – Suitable for Allergic People" for the air purifier MC70LVM.

VIII Conditions for the use of the TÜV NORD test mark

- VIII.1** Daikin Europe N. V., Oostende (Belgium), is hereby granted permission to use the TÜV NORD test mark "**Indoor Air Hygiene Test – Suitable for Allergic People**". This approval applies exclusively to the model of the air purifier MC70LVM which was tested. The permission to use this test mark also applies to Daikin's affiliates, distributors, authorized dealers and authorized sales companies.
- VIII.2** The product which was tested is documented by the test specimen deposited with the test institute.
- VIII.3** Maintenance of the level of technology and the retention characteristics of the product will be checked by TÜV NORD in a periodic inspection conducted at least once a year.
- VIII.4** TÜV NORD will take the test specimen for the periodic inspection from production or from stock without prior notice.
- VIII.5** To maintain the approval for use of the TÜV NORD test mark "**Indoor Air Hygiene Test – Suitable for Allergic People**" the periodic inspections must be completed with positive results.

TÜV NORD Systems GmbH & Co. KG
Testing Laboratory for Indoor Air Hygiene

Essen, 14 March 2011



Dipl.-Ing. M. Klein