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RATING STANDARD
for the
CERTIFICATION
of
Air Cleaners

RS/4/C/002-2017

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TABLE OF CONTENTS

I. PURPOSE	4
II. SCOPE	4
III. DEFINITIONS	4
IV. TESTING REQUIREMENTS	4
V. RATING REQUIREMENTS	4
VI. CERTIFIED PERFORMANCE ITEMS	4
VII. TOLERANCES	4
APPENDIX A. AIR CLEANERS EFFICIENCY CLASSIFICATION AND LABELLING	5
A.I. Definition of the parameters that appear on the label	5
A.II. Definition of the efficiency classes and related thresholds.....	6

I. PURPOSE

The purpose of this Rating Standard is to establish definitions and specifications for testing and rating of Air Cleaners (ACL), for the related Eurovent Certified Performance (ECP) certification programme, in accordance with Operational Manual OM-20.

II. SCOPE

Please refer to related paragraph in the Operational Manual OM-20.

III. DEFINITIONS

For general definitions regarding the ECP certification scheme refer to Certification Manual.

For definitions specific to the Air Cleaners refer to NF-Air Cleaners (NF-536) reference document available on-line <http://www.certita.fr/en/certita-mark/nf-air-cleaners>.

IV. TESTING REQUIREMENTS

Test shall be conducted in accordance with the testing conditions specified in the NF-Air Cleaners (NF-536) reference document.

V. RATING REQUIREMENTS

The rating requirements and acceptance criteria are specified in the NF-Air Cleaners (NF-536) reference document.

VI. CERTIFIED PERFORMANCE ITEMS

The certified characteristics, declared by the applicant/participant and verified by tests, are specified in the NF-Air Cleaners (NF-536) reference document.

VII. TOLERANCES

When tested in the laboratory the obtained performance data shall not differ from the declared values by more than the applicable tolerance values given in the NF-Air Cleaners (NF-536) reference document.

If any of individual points of measurement shows a deviation larger than the acceptable tolerance, the failure shall be declared and the failure procedure applied.

APPENDIX A. AIR CLEANERS EFFICIENCY CLASSIFICATION AND LABELLING

A.I. Definition of the parameters that appear on the label

A.I.1) Clean Air Efficiency of a given pollutant category

The Clean Air Efficiency of a given pollutant category is defined as the ratio between the minimum initial purified air flow rate value of the category and the absorbed electrical power, both measured for the maximum operation speed (see the “NF-Air Cleaners” (NF-536) reference document for further details about these performance items).

The Clean Air Efficiency is rounded down to nearest second digit and expressed in [m³/h/W].

The Clean Air Efficiencies are expressed as follows:

$$\text{Clean Air Efficiency}_{\text{particles}} = \frac{\text{Min}(Q_{AE1}; Q_{AE2}; Q_{AE3})}{P_{E\max}}$$

$$\text{Clean Air Efficiency}_{\text{gases}} = \frac{\text{Min}(Q_{AE4}; Q_{AE5}; Q_{AE6}; Q_{AE7}; Q_{AE8})}{P_{E\max}}$$

$$\text{Clean Air Efficiency}_{\text{micro-organisms}} = \frac{\text{Min}(Q_{AE9}; Q_{AE10})}{P_{E\max}}$$

$$\text{Clean Air Efficiency}_{\text{allergens}} = \frac{Q_{AE11}}{P_{E\max}}$$

Where (see NF-536 reference document):

- Q_{AEi} [m³/h] is the initial purified air flow rate for the pollutant identified by the index i
 - $Q_{AEi} = E_i \cdot Q_{\max} \cdot 100$
 - E_i [%] is the purification efficiency with respect to the pollutant identified by the index i
 - $i = 1$ for inert particles of 0.3 μm to 0.5 μm size
 - $i = 2$ for inert particles of 1.0 μm to 2.0 μm size
 - $i = 3$ for inert particles of 3.0 μm to 5.0 μm size
 - $i = 4$ for Acetone
 - $i = 5$ for Acetaldehyde
 - $i = 6$ for Heptane
 - $i = 7$ for Toluene
 - $i = 8$ for Formaldehyde
 - $i = 9$ for Staphylococcus epidermidis
 - $i = 10$ for Aspergillus niger
 - $i = 11$ for Fel-D1 cat allergen
 - Q_{\max} is the air circulation flow rate at maximum speed
- $P_{E\max}$ [W] is the absorbed electrical power at maximum speed

A.I.2) Recommended room surface area

The recommended room surface area [m²] indicated is the maximum of the room surface areas calculated for each pollutant as described in the NF-536 reference document.

This is why the labelling specifies “up to X m²” with X the recommended room surface area. It is considered that the room has a ceiling height of 2.5m.

A.II. Definition of the efficiency classes and related thresholds

An efficiency class is determined for each of the 4 categories of pollutant from the corresponding Clean Air Efficiency (CAE) values.

Thresholds are set as described in Table 1 below.

Table 1 : Clean Air Efficiency thresholds for each efficiency class

<i>Clean Air Efficiency class</i>	<i>Clean Air Efficiency value</i>
A	$13 \text{ m}^3/\text{h}/\text{W} \leq \text{CAE}$
B	$7 \text{ m}^3/\text{h}/\text{W} \leq \text{CAE} < 13 \text{ m}^3/\text{h}/\text{W}$
C	$5 \text{ m}^3/\text{h}/\text{W} \leq \text{CAE} < 7 \text{ m}^3/\text{h}/\text{W}$
D	$2 \text{ m}^3/\text{h}/\text{W} \leq \text{CAE} < 5 \text{ m}^3/\text{h}/\text{W}$
E	$\text{CAE} < 2 \text{ m}^3/\text{h}/\text{W}$