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**TESTED[®]
DEVICE**

DMAS BV
Hybrid absorber HT45
Report No. DU 1410-727

DUPLICATE

Statement of
Qualification

Outgassing Behavior

Statement of Qualification

Customer: Dutch Microwave Absorber Solutions BV
 Industrieweg 12
 2382NV Zoeterwoude
 The Netherlands

Component tested

Category: Cleanroom facilities

Subcategory: Wall / Ceiling / Floor

Product name: Hybrid absorber HT45
 (manufacturing date: August 24, 2014; color: grey; batch number: 2779)

Emission chamber measurements with purge-and-trap thermodesorption method and gas chromatography combined with mass spectrometry (TD-GC/MS)

Standards/Guidelines: ISO 14644-8; ISO 16000-6, -9, -11, -25; VDI 2083-17
 The norms stated refer to the relevant editions applicable at the time of the tests.

Testing equipment:

- Measuring station:.....PerkinElmer Clarus 600, Clarus 600T, ATD 650
- Sampling chamber:.....Markes International µCTE

Sample storage:

- Age of sample:.....31 days

Test parameters used:

- Retention range:..... VOC (C6 to C16)
- Outgassing test temperatures:..... 23°C and 70°C

Test result / Classification:
 (in acc. with ISO 14644-8, VDI 2083-17)

The outgassing behavior of the named material at the stated temperatures was investigated according to VDI 2083-17. Based on the outgassing rates determined for the specific surfaces, the following material classification was made for the corresponding contaminant group:

Test temperature	Contaminant group	Specific emission rate [g/m²s]	ISO-ACC _m - Class (x)
23 °C	VOC	9.9 x 10 ⁻⁸	-7.0
70 °C	Amines	Not detectable	--
	Organophosphates	2.0 x 10 ⁻⁶	--
	Siloxanes	Not detectable	--
	Phthalates	Not detectable	--

The detection limit at the time of the test was ISO-ACC_m Class = -9.6 (VOC). The ISO-ACC_m Class (x) was assigned for the named contaminant group x at the test temperature of 23 °C (room temperature).

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

For further information about the test environment and parameters, please refer to the Fraunhofer IPA test report.

Fraunhofer Institute for
 Manufacturing Engineering and Automation IPA

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Stuttgart, January 15, 2015

Place, date of first document issued

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Place, current date

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