

# Emicode for Art-Stuc system



## GEV requirements

EMICODE® seal is the quality mark of the Association for the Control of Emissions in Products for Floor Installation, Adhesives and Building Materials . Since 1997, GEV awards its quality mark GEV EMICODE® to low-emission flooring underlays and construction products.

In the focus of the tests according to ISO 16000 is the VOC missions' behaviour which are, if meeting EMICODE criteria, classified in 3 categories by the GEV:

- EMICODE EC1 PLUS – very low emission
- EMICODE EC1 – very low emission
- EMICODE EC2 – low emission.

## Floor installation products

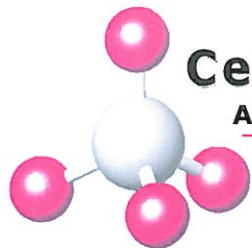
µg/m <sup>3</sup>	EC1 <sup>PLUS</sup>	EC1	EC2
TVOC after 3 days	≤ 750	≤ 1000	≤ 3000
TVOC after 28 days	≤ 60	≤ 100	≤ 300
TSVOC after 28 Tagen	≤ 40	≤ 50	≤ 100
R value based on AgBB-LCI-values after 28 days	1	–	–
Total of non-evaluable VOC	≤ 40	–	–
Formaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Acetaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Total of form- and acetaldehyd	≤ 0.05 ppm	≤ 0.05 ppm	≤ 0.05 ppm
Total of volatile C1/C2-substances after 3 days	≤ 10	≤ 10	≤ 10
Each C1/C2 substance after 28 days	≤ 1	≤ 1	≤ 1

## Surface treatment agents

$\mu\text{g}/\text{m}^3$	EC1 <sup>PLUS</sup>	EC1	EC2
Total TVOC + TSVOC after 28 days	$\leq 100$ (of which max. 40 SVOC)	$\leq 150$ (of which max. 50 SVOC)	$\leq 400$ (of which max. 100 SVOC)
Formaldehyde after 3 days	$\leq 50$	$\leq 50$	$\leq 50$
Acetaldehyde after 3 days	$\leq 50$	$\leq 50$	$\leq 50$
R value based on AgBB-LCI-values after 28 days	1	-	-
Total of non-evaluable VOC	$\leq 40$	-	-
Total of form- and acetaldehyd	$\leq 0.05$ ppm	$\leq 0.05$ ppm	$\leq 0.05$ ppm
Total of volatile C1/C2-substances after 3 days	$\leq 10$	$\leq 10$	$\leq 10$
Each C1/C2 substance after 28 days	$\leq 1$	$\leq 1$	$\leq 1$

In relation to the test attached below, it can be understood that our product belongs to the EC1 plus class.





# Centro Analisi Chimiche s.r.l.

**Analisi chimiche, microbiologiche e ambientali**

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## Test Report

### Pava Resine Srl

Product Emissions in accordance with EN ISO 16000 (parts 3,6,9,10,11) or very similar methods of

### DECOR ART-STUC (SYSTEM)

October 2012

Client: Pava Resine Srl  
Via Dolomiti, 6/1  
I-35018 S. Martino di Lupari (PD) Italy

Date: 31/10/2012

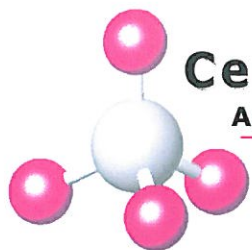
Rapp. di prova 121711-001

Testing Laboratory: Centro Analisi Chimiche Srl  
Via Avogadro, 23  
I-35030 Rubano (PD) Italy

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## INTRODUCTION

On 01/10/2012 Centro Analisi Chimiche Srl received a sample of

### DECOR ART-STUC (SYSTEM)

For emissions testing in accordance with EN ISO 16000 (parts 3,6,9,10,11) or very similar methods. The sample was clearly labeled, properly packaged and not damaged. Testing was carried out in the laboratories of Centro Analisi Chimiche Srl. Before starting the testing procedure the sample had been stored unopened at room temperature.

## 1. Description of the applied Testing Method

The applied method complies with the test method as defined by

- EPA (Environmental Protection Agency)
- in accordance with EN-ISO 16000 (parts 3,6,9,10,11) or very similar methods.
- For the evaluation of emission components, ECA *Report 18* (European Collaborative Action "Indoor Air Quality, and Its Impact On Man", Evaluation of VOC emission from building products; solid flooring materials), *Report 19* (Total Volatile Organic compounds TVOC in Indoor Air Quality Investigations, 1997), *Report 20* (Sensory Evaluation of Indoor Air Quality, 1999), *Report 24* (Harmonisation of Indoor Material Emissions Labelling Systems in the EU, Inventory of Existing Schemes, 2005), EUR 17334 EN and EN 13419.
- Defined a critical level of emission (LCI) of a single component reported in  $\mu\text{g}/\text{m}^3$
- The German AgBB Committee has introduced an interpretation scheme [Ausschuss zur Gesundheitlichen Bewertung von Bauprodukten (AgBB) "Bewertungsschema für VOC aus Bauprodukten", Part 3, 1 March 2008] – AgBB (Health-related Evaluation of emissions of VOC from Building Products).
- Specifications EMICODE Classes EC1 and EC1<sup>PLUS</sup>.  
This scheme validates the accumulated emission products at 3 and 28 days after applying the flooring products, in accordance with EN-ISO 16000 (parts 3,6,9,10,11).

### 1.1 Testing procedure

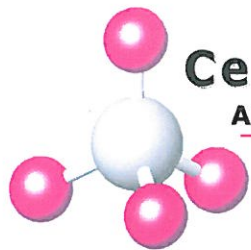
#### 1.3.1 Testing for Carcinogens after 3 days

The presence of the following chemical compounds was checked:

Acrylamide, acrylonitrile, benzene, 1,4-dioxane and vinylacetate formaldehyde and acetaldehyde

Air sampling onto Chromosorb 106 from compounds after 3 days, followed by thermal desorption, gas chromatography and mass spectroscopy. The uncertainty amounted to  $\pm 20\%$  (RSD). The expanded uncertainty is equal to  $2 \times \text{RSD}\%$ .

The absence of compounds was stated if the specific combination of fragments ions was lacking at the specific retention time in the chromatogram. Otherwise it was checked whether the claimed detection limit was exceeded. In this case the identity was finally checked by comparing full scan sample mass spectra with full scan standard mass spectra.



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## 1.3.2 Emissions Testing after 3 days (TVOC)

The emission of organic compounds was checked after 3 days storage under controlled conditions with gas chromatography and mass spectroscopy. The uncertainty amounted to  $\pm 20\%$  (RSD). The expanded uncertainty is equal to  $2 \times \text{RSD}\%$ .

## 1.3.3 Emissions Testing after 28 days

The emission of carcinogens and VOC was further checked also after 28 days in the same conditions.

## 2. Results

### 2.1 Emission of Carcinogens after 3 Days

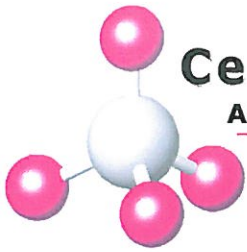
DECOR ART-STUC SYSTEM	Air concentration, $\mu\text{g}/\text{m}^3$	Limit value, $\mu\text{g}/\text{m}^3$
<u>Analytical group</u>		
Acrylamide	< 1 (below limit of detection)	< 10
Acrylonitrile	< 1 “	< 10
Benzene	< 1 “	< 2
1,4-dioxane	< 1 “	< 50
Vinylacetate	< 1 “	< 50
Formaldehyde	< 2 “	< 50
Acetaldehyde	< 2 “	< 50

### 2.2 Emission of VOC after 3 Days

DECOR ART-STUC SYSTEM	After 3 days $\mu\text{g}/\text{m}^3$
<b>Total (TVOC)</b>	<b>&lt; 5</b>

### 2.3 Emission of Carcinogens after 28 Days

DECOR ART-STUC SYSTEM	Air concentration, $\mu\text{g}/\text{m}^3$	Limit value, $\mu\text{g}/\text{m}^3$
<u>Analytical group</u>		
Acrylamide	< 1 (below limit of detection)	< 10
Acrylonitrile	< 1 “	< 10
Benzene	< 1 “	< 2
1,4-dioxane	< 1 “	< 50
Vinylacetate	< 1 “	< 50
Formaldehyde	< 2 “	< 50
Acetaldehyde	< 2 “	< 50



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## 2.4 Emission of VOC after 28 Days

DECOR ART-STUC SYSTEM	After 28 days, $\mu\text{g}/\text{m}^3$
Total (TVOC)	< 5

Categories of identity:

- 1: definitely identified, specifically calibrated
- 2: identified by comparison with a mass spectrum obtained from a library, identity supported by other information, calibrated as toluene equivalent
- 3: identified by comparison with a mass spectrum obtained from a library, calibrated as toluene equivalent
- 4: not identified, calibrated as toluene equivalent
- 5: no identification due to low concentration

## 3. Interpretation of the Results

Emissions testing of the sample named **DECOR ART-STUC SYSTEM** leads to the following conclusions:

**All carcinogens were below the individual limit values**

**TVOC emissions after 3 and 28 days below  $5 \mu\text{g}/\text{m}^3$**

