



## GEV – Classification Criteria

**Requirements for Emission Controlled  
Products for Wooden Floor Surface Treatments,  
as well as Lacquers, Finishes and Oils for Mineral Floors and  
Lacquers for Resilient Floor Coverings  
and the Award of the EMICODE®**

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## 1. Objective

This document specifies criteria for an evaluation of surface treatment products for parquet, as well as lacquers, finishes and oils for mineral floors and lacquers for resilient floor coverings and for a classification with respect to long-term emissions.

## 2. Range of application and definitions

### 2.1 Products for wooden floor surface treatments

Products for wooden floor surface treatments are water-based coatings/lacquers, primers and oils for surface treatment of parquet floorings, and water-based gap filler solutions for parquet. Products used for temporary cleaning and care products are not considered products for floor surface treatments within the frame of this definition.

### 2.2 Lacquers, finishes<sup>1</sup> and oils for mineral floorings

Water-based lacquers and finishes as well as oils are used for durable surface treatment of mineral floors (tiles, natural stone sheets, terrazzo floors, concrete floors and more). Products used for temporary finishing, cleaning and care products are not considered products for floor surface treatments within the frame of this definition.

### 2.3 Lacquers for resilient floor coverings

Water-based lacquers are used for surface treatment of resilient floor coverings. Products used for temporary finishing, cleaning and care products are not considered products for floor surface treatments within the frame of this definition.

### 2.4 Volatile organic solvents – DecoPaint Directive

European Directive 2004/42/EU limits the use of volatile organic compounds in certain paints and coatings. The term “volatile organic compound (VOC)” is defined by the Directive as a compound with an initial boiling point of maximum 250 °C at a standard air pressure of 1013 hPa.

### 2.5 Volatile organic compounds – terms for GEV

The definitions of EN 16516 apply to volatile organic compounds that can be emitted into indoor air during normal use.

#### 2.5.1 Volatile organic compounds – VOC

Organic compounds that are detected in the interval of *n*-hexane (*n*-C<sub>6</sub>) to *n*-hexadecane (*n*-C<sub>16</sub>) under the conditions specified in the “GEV Testing Method”.

#### 2.5.2 Semi-volatile organic compounds – SVOC

Organic compounds that are detected after *n*-hexadecane (> *n*-C<sub>16</sub>) and before *n*-docosane (*n*-C<sub>22</sub>) under the conditions specified in the “GEV Testing Method”.

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<sup>1</sup> No maintenance products.

### **2.5.3 Very volatile organic compounds – VVOC**

Organic compounds that are detected before *n*-hexane (< *n*-C<sub>6</sub>) under the conditions specified in the “GEV Testing Method”.

## **2.6 Emissions**

Emissions are all volatile organic compounds that are released from products into the surrounding indoor air under normal conditions. The emissions behaviour is monitored in emissions test chambers.

## **2.7 Emissions controlled products**

Emissions controlled products fulfil the requirements as specified in clause 3.1 and 3.2.

## **2.8 EMICODE®**

EMICODE® is a registered mark of the GEV to classify and label emissions controlled products.

The term EMICODE® is used to classify products with respect to their emissions, always in combination with the applicable emissions class according to 3.2.2 as follows:

EMICODE® EC 1 <sup>PLUS</sup> :	„very low emission <sup>PLUS</sup> “
EMICODE® EC 1:	„very low emission“
EMICODE® EC 2:	„low emission“

The EMICODE® can be assigned to products from the following groups:

- *Products for wooden floor surface treatments*  
Water-based parquet lacquers/coatings, water-based parquet primers and joint fillers for parquet, parquet oils, water-based UV lacquers for parquet, UV-curing lacquers (100 % solid) for parquet
- *Water-based lacquers and finishes and oils for mineral floorings*
- *Water-based lacquers and primers for resilient floorings, water-based UV lacquers for resilient floorings, UV-curing lacquers (100 % solid) for resilient floorings*

## **3. Requirements for emissions controlled products for wooden floor surface treatments, lacquers, finishes and oils for mineral floors and lacquers for resilient floor coverings**

Construction products shall be safe in use. This includes that they must not be hazardous to the health of installers or users and shall have the lowest possible impact on the environment by emissions. For these reasons the following requirements are specified for emissions controlled products for wooden floor surface treatments, water-based lacquers and finishes as well as oils for mineral floors, and water-based lacquers for resilient floor coverings.

## 3.1 General and substance-related requirements

### 3.1.1 Chemical laws

All legal regulations with regard to production, labelling and packaging must be observed during manufacture of emissions controlled products for wooden floor surface treatments, water-based lacquers and finishes as well as oils for mineral floors, and water-based lacquers for resilient floor coverings.

A safety data sheet shall be prepared for emissions controlled products if required according to local law.

### 3.1.2 Restriction of chemicals

#### 3.1.2.1 Toxic products

Products (mixtures) which are classified according to European Hazardous Substances Regulation (EC) No. 1272/2008 (CLP Regulation) are classified in categories 1, 2 or 3 with regard to their toxic properties (CLP: Part 3: 3.1 acute toxicity) are excluded from the EMICODE.

#### 3.1.2.2 CMR substances

CMR substances of categories 1A or 1B, shall not be actively used<sup>2</sup> in EMICODE® products unless

- they do not emit into indoor air<sup>3</sup> and
- the concentration of use does not lead to labelling of the product with the following H-phrases H340, H350, H350i, H360, H360D, H360F, H360FD, H360fd H360Df or H360Fd.

The legal limits of the CLP Regulation (Regulation (EC) No 1272/2008) apply.

#### 3.1.2.3 SVHC substances

Substances included under the REACH Regulation (EC 1907/2006) in accordance with art. 57 in the list established under REACH art. 59(1) (the so-called "Candidate List") must not be actively used in EMICODE® products<sup>2,4</sup>, unless

- they do not emit into indoor air<sup>3</sup> and
- the concentration of use is below the labelling limit for hazardous substances.

At the time of application (initial application as well as licence renewal application), the [current candidate list](#) applies.

#### 3.1.2.4 Oximes

Products (mixtures) which contain Methyl Ethyl Ketoxime (MEKO, Butanone oxime), Methyl Isobutyl Ketoxime (MIBKO) or Acetone oxime or which release them during curing are excluded from EMICODE®.

<sup>2</sup> Due to the use of technical raw materials, however, impurities of up to 0.1 % may be detectable in each case.

<sup>3</sup> This means they are not detectable in an emission test according to the GEV testing method.

<sup>4</sup> So-called POP substances (persistent organic pollutants according to Regulation (EU) 2019/1021 (EU POP Regulation)) may also not be actively used in EMICODE® products. These include, for example, PBDE and DecaBDE.

### 3.1.2.5 Solvents

Products for wooden floor surface treatments, as well as water-based lacquers, water-based finishes and oils for mineral floors, and water-based lacquers for resilient floor coverings must show a content of solvent as in clause 2.4 of maximum

- 3 % w/w VOCs for category EMICODE® EC 1<sup>PLUS</sup>
- 5 % w/w VOCs for category EMICODE® EC 1 and
- 8 % w/w VOCs for category EMICODE® EC 2

GEV aims at a further reduction of solvent content, as far as technically feasible.

## 3.2 Requirements on emissions

Products for wooden floor surface treatments, as well as water-based lacquers, water-based finishes and oils for mineral floors, and water-based lacquers for resilient floor coverings, may contain so-called film building agents. These are organic compounds (VVOC, VOC or SVOC) that are released into indoor air partly during application, or during initial occupancy of the room.

To limit these so-called emissions, the following specifications apply to emissions-controlled products:

### 3.2.1 Volatile carcinogenic substances

A test shall show that emissions of the sum of all volatile carcinogenic organic substances of cat. 1A and 1B is below 10 µg/m<sup>3</sup> after 3 days and the emissions of any such individual VOC are below 1 µg/m<sup>3</sup> after 28 days. Testing shall be performed according to the separate document "GEV Testing Method".

Excluded from this requirement are defined substances classified as carcinogen 1A or 1B for which a limit value can be derived for the most sensitive endpoint at which a carcinogenic potential can no longer be assumed and for which a LCI value is derived on this basis. These substances are treated in the same way as other VOC substances with LCI values.

Deviating from the above, the following substance-specific requirements are placed on the emission behaviour of products:

- Formaldehyde (cat. 1B) and acetaldehyde (cat. 1B) after three days each not above 50 µg/m<sup>3</sup>,
- Formaldehyde (cat. 1B) after 28 days not above 10 µg/m<sup>3</sup>,
- Sum of formaldehyde and acetaldehyde after three days must not be above 0,05 ppm.

### 3.2.2 Volatile and semi-volatile organic compounds

Determination of volatile organic compounds that might be released from a product during a longer period is performed as specified in the "GEV Testing Method".

Classification of a product is done on the basis of the results of that test.

Emissions are evaluated after 28 days.

Emissions controlled products must not exceed these maximus emissions levels:

EMICODE®	after 28 days TVOC / TSVOC [ $\mu\text{g}/\text{m}^3$ ]
EC 1 <sup>PLUS</sup>	$\leq 100$ thereof max. 40 SVOC
EC 1	$\leq 150$ thereof max. 50 SVOC
EC 2	$\leq 400$ thereof max. 100 SVOC



In addition, products labelled with EMICODE® EC1<sup>PLUS</sup> must comply with the LCI-values and the R-value of the most recent [AgBB evaluation scheme](#) after 28 days, and with an upper limit value of  $40 \mu\text{g}/\text{m}^3$  for the sum of non-assessable VOCs (VOCs without LCI-value and non-identified VOCs).



Products that are labelled with EMICODE® EC 1 must also comply with the LCI values and the R-value of the current AgBB evaluation scheme after 28 days.

Results for acetic acid are not included in the calculation of TVOC and R value because acetic acid cannot be determined with the GEV testing method in a quantitative manner according to EN 16516<sup>5</sup>.

Compliance is given as well if all limit values for a 28 days test are respected at an earlier point in time than after 28 days, but not earlier than after 10 days, provided that there was not observed any increase of emissions compared with the results after 3 days.

## 4. Classification of products

### 4.1 Responsibility of the manufacturer

The manufacturer is responsible for determining whether and which of the above requirements a complies with. This applies in particular to changes to the labelling of components or the finished product under hazardous substances legislation and/or changes to the formulation that may lead to reclassification according to the EMICODE® system.

### 4.2 Testing

Testing to determine product emissions shall be carried out by a laboratory holding an accreditation in accordance with ISO 17025 that includes the "GEV Testing Method" or the EN 16516.

Documentation of the test results is performed according to the manufacturer's own internal system.

<sup>5</sup> According to the experience of the GEV, the LCI-value of acetic acid always is respected clearly.

## 4.3 Licensing the EMICODE®

### 4.3.1 Application for a licence

A formal and justified application for a licence to use the EMICODE® label can be sent to the GEV if the relevant product meets the specifications of clause 3. A special form is available from the GEV and shall be used for the application.

### 4.3.2 Awarding of the licence

After the licence is granted the product may be labelled with the EMICODE®. The word EMICODE® shall only be shown in combination with the correct emission class. Only the GEV document "Awarding of licence for the use of EMICODE®" may be used for showing compliance of a product with the GEV Specifications and Classification Criteria.

## 4.4 Control checks

The GEV reserves the right to examine the correct classification of any licensed product. GEV follows advice from third parties on incorrect classifications and punishes these according to the sanctions that are specified in the GEV statutes.

For this purpose GEV uses one or several independent experts who check compliance with the specifications in clause 3. An evaluation of substances as in 3.2.1 and 3.2.2 must be performed only using the analytical procedures described in the "GEV Testing Method" by an authorised testing laboratory.

## 4.5 Authorised testing laboratories

The Technical Council of the GEV decides on which testing laboratories are accepted for testing in cases of dispute and for control testing. The basic requirement is an accreditation of the chamber testing and of the involved analytical method according to ISO 17025.

Participation in round robin tests that are open to any laboratory to show their performance gives additional indication of qualification to the Technical Council. A current list of authorized laboratories is available at GEV's homepage [www.emicode.com/en/laboratories](http://www.emicode.com/en/laboratories).

## 5. Accompanying documents

- GEV Constitution
- GEV Testing Method
- Form Sheets: "Application for Licence" and "Awarding of Licence"

## 6. Changes and adaptations

The Technical Council of the GEV is responsible for setting specifications and classification criteria. Documentation and adaptation of changes is the responsibility of the GEV.