



GEV – Classification Criteria

**Requirements for Emission Controlled
Installation Products, Adhesives and Building Materials
and Award of the EMICODE**

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1. Objective

This document specifies criteria for an evaluation of installation products, adhesives and building materials in conformance with BRCW 3¹ criteria on hygiene, health and the environment and for classification with respect to long-term emissions.

2. Range of application and definitions

2.1 Installation products

Installation products are materials that are used in buildings for interior finishing mostly as plane products to prepare surfaces and to install or to glue floor, wall or ceiling coverings.

2.2 Other adhesives

Other adhesives are products that are used to glue materials and that are not specified under 2.1.

2.3 Other products

Other products are screeds, sealing and insulation products and other products that are specified under 2.8.



Classification criteria for products for floor surface treatments (surface coatings/laquers for parquet, as well as lacquers, finishes and oils for mineral floorings, and lacquers for resilient floor coverings) are specified in a separate document.

2.4 Solvents

Solvents are volatile organic compounds and their mixtures with a boiling point ≤ 200 °C, liquid at normal conditions (20 °C and 1013 hPa), that are used to solve or dilute other substances without changing their chemical characteristics².

Solvent-free installation products, adhesives and construction products may contain traces of solvents (< 0.5 weight-percent) resulting from contaminants in raw materials.

2.5 Volatile organic compounds – terms for GEV

The definitions of EN 16516 apply to characterise 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*-C₆) to *n*-hexadecane (*n*-C₁₆) 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*-C₁₆) and before *n*-docosane (*n*-C₂₂) under the conditions specified in the “GEV Testing Method”.

2.5.3 Very volatile organic compounds – VVOC

Organic compounds that are detected before *n*-hexane (< *n*-C₆) under the conditions specified in the “GEV Testing Method”.

2.6 Emissions

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

¹ BRCW No. 3 of the Construction Products Regulation (CPR), Annex 1 No. 3b (Basic Requirements on Construction Works).

² See TRGS 610.

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 3.2.3 as follows:

EMICODE EC 1 ^{PLUS} :	„very low emission ^{PLUS} “ ³
EMICODE EC 1:	„very low emission“ ³
EMICODE EC 2:	„low emission“ ³

The EMICODE can be granted to installation products, adhesives and construction products included in the following groups:

- *Liquid products*
Precoats, primers, barrier or damp barriers, ready-to-use thin fluid fixations or adhesives, anti-slip coatings for self-laying floor coverings, rolled fixatives, spray adhesives, screw locking adhesives, wood glues, dispersion based additives for mineral tile mortars and levelling compounds, dispersion based bonding courses (e.g. for bonded screeds), cement based waterproofing slurries, liquid sealants, liquid membranes, reactive surface sealants, binders for synthetic resin screed, casting resins
- *Powdery products*
Cement and calcium sulfate based levelling compounds, cement based and other mineral tile mortars (thin bed and medium bed mortars), mortars for brickwork, cement and calcium sulfate based screed mortars and screed binding materials, powdery and liquid screed admixtures, powdery adhesives (other than tile adhesives), cement based composite waterproofing slurries and coatings, powdery bonding courses (e.g. for bonded screeds), filling and levelling primers, quick cements
- *Pasty products*
Adhesives for floor coverings, parquet, or ready-to-use adhesives for ceramic tiles, assembly adhesives and other pasty adhesives, pasty fixatives for floor coverings, dispersion based or reactive resin based levelling compounds, sealants under tiles based on dispersions or reactive resins, joint grouts based on dispersions or reactive resins
- *Ready-to-use products that do not require chemical curing or physical drying*
Underlays (e.g. footfall damping underlays, self-adhesive underlays), adhesive tapes, installation panels, wall panels, decoupling panels, damping panels, planar sealing tapes and collars for small surfaces (e.g. for window, façade, in wet areas), sealing membranes for large surfaces (e.g. for walls and floor in wet areas), vapour retarder under the roof
- *Joint sealants, joint insulations, joint sealing tapes*
Joint sealants based on dispersions or reactive resins, assembly and insulation foams, compressed sealant tapes according to DIN 18542 and foam sealing tapes

³ For usage of the supplemental label “R” (regulated) see clause 3.1.3.

3. Requirements for emissions controlled installation products, adhesives and construction products

Installation products, adhesives and construction products shall be safe in use. This includes that they must not, therefore, 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 installation products, adhesives and construction products.

3.1 General requirements

3.1.1 Chemical laws

All legal regulations with regards to production, labelling and packaging must be observed during manufacture of emissions controlled installation products, adhesives and construction products.

A Safety Data Sheet according to local law has to be issued for each emissions controlled product even if this is not legally required.

3.1.2 Restrictions of chemicals

Products that are assigned any of the toxicity categories 1 to 3 by European chemical laws are excluded from the EMICODE. The following restrictions on EMICODE labelling are based on the rules on assignment of CMR properties in the CLP Regulation (EC) 1272/2008⁴.

- No substances with any of the following properties must be used in EMICODE labelled products:
 - Substances that are identified as being of very high concern (REACH regulation (EC) 1906/2006 art. 57) and therefore are listed in the candidate list (REACH art. 59(1))⁵. The most recent candidate list is relevant when applying for a licence. Additional listing of substances shall be adopted within 12 months after publication of the amended candidate list.
 - Substances that are labelled in a Safety Data Sheet with properties that can lead to inclusion in the candidate list (REACH art. 57) are treated in the same manner as substances already listed.⁵
 - This includes e.g. substances with proven carcinogenic, reproduction toxic or teratogenic properties ("CMR substances" of categories 1A and 1B).
- Methyl ethyl ketone oxime (MEKO, Butanone oxime) and methyl isobutyl ketone oxime (MIBKO) as such or mixtures, as well as Butanone oxime dissociating products, must not be used for the sake of occupational hygiene. Acetone oxime must not be used as of 31.12.2019. A specific test therefore is not required.
- Emissions controlled installation products, adhesives and construction products are manufactured without any addition of solvents (see 2.4).

⁴ Deviating classification rules in other regions outside the EU are not considered.

⁵ Use of technical raw material can lead to detectable contaminations of up to 0.1 % each.

3.1.3 Occupational safety

The EMICODE label must be amended by the appendage “R” (regulated) for installation products, adhesives and construction products that comply with the requirements under 3.1.1, 3.1.2 and 3.2, if they

- have to be labelled in accordance with the CLP regulation (EU) No. 1272/2008
- or have to be labelled with risk phrases (e.g. H-phrases)
- or have to be labelled as hazardous preparations according to local law where the product is used, and therefore may need special measures for occupational safety (e.g. reactive resins, cement based products)
- or will dissociate and release VVOC by chemical reaction (e.g. silane functional reactive resins)



3.2 Requirements on emissions

Solvent-free products still may contain and release volatile organic compounds (VVOC, VOC or SVOC), parts of which are released into indoor air during application, but mainly during later occupancy. To limit these so-called emissions, the following specifications apply to emissions controlled installation products, adhesives and construction products.

3.2.1 Volatile carcinogenic substances

A test shall show that emissions of the sum of all volatile carcinogenic organic compounds of category 1A and 1B does not exceed 10 µg/m³ after 3 days and the emissions of any such individual VOC does not exceed 1 µg/m³ after 28 days. Testing shall be performed according to the separate document “GEV Testing Method”.

Deviating from the above, product emissions after 3 days are limited as follows:

- Formaldehyde (cat. 1B) and acetaldehyde (cat. 2), each must not be above 50 µg/m³,
- Sum of formaldehyde and acetaldehyde must not be above 0,05 ppm.

3.2.2 Silane functional products

Silane functional adhesives and primers can only be EMICODE labelled if the most recent German Occupational Exposure Limit of the intentionally released alcohol is not exceeded during installation work.⁶

3.2.3 Volatile and semi-volatile organic compounds

Determination of volatile organic compounds that might be released from a product during a longer time 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 3 days and after 28 days.

⁶ In Germany the German institution for statutory accident insurance and prevention for the construction industry (Berufsgenossenschaft der Bauwirtschaft) showed that products fitting into the category GISCODE RS 10 (or lower) will fulfil this requirement.

Emissions controlled products must not exceed these maximum emissions levels:

EMICODE	after 3 days TVOC [$\mu\text{g}/\text{m}^3$]	after 28 days TVOC / TSVOC [$\mu\text{g}/\text{m}^3$]
EC 1 ^{PLUS}	≤ 750	$\leq 60 / \leq 40$
EC 1	≤ 1000	$\leq 100 / \leq 50$
EC 2	≤ 3000	$\leq 300 / \leq 100$

The label is supplemented with a final letter “R” (e.g. EMICODE EC 1 R) for products that fulfil the specifications in clause 3.1.3 and that therefore may require measures for occupational safety during application.



In addition, products labelled with EMICODE EC 1^{PLUS} 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). 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 16516⁷.

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 performs the evaluation whether and which of the before-mentioned specifications are fulfilled by a product in his own responsibility. This concerns especially any changes in recipe that may lead to a re-classification of products.

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.

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

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 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 emissions class. Only the GEV document “Awarding of licence for the use of EMICODE” may be used for showing compliance of the product with the GEV Specifications and Classification Criteria.

⁷ According to the experience of the GEV, the LCI-value of acetic acid always is respected clearly.

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 3.2.3 must be performed only using the analytical procedures described in the “GEV Testing Method” by a testing laboratory ISO 17025 accredited for that type of testing.

If the manufacturer doubts the results he may request a repetition of the test with the same control sample at his own cost.

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 control for testing. The basic requirement is an accreditation of the chamber testing and of the involved analytical methods according to ISO 17025.

A participation in round robin tests that allow any interested laboratories to show their performance gives additional indication of qualification to the Technical Council. GEV operates a list of authorised 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.