



Specifications Indoor Air Comfort and Indoor Air Comfort Gold

Version 9.0 | June 2023



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Introduction

This document contains the specifications for certification and labelling of building materials, decorative coatings and furniture with the labels Indoor Air Comfort or Indoor Air Comfort Gold.

This certification program is an additional quality tool for improving Indoor Air Quality, providing more security to consumer and to industry. The most efficient tool to ensure continuous low VOC emissions of a product is a combination of product testing, factory production control, and external surveillance of the emission relevant processes and parameters during production.

Therefore, Eurofins launched the “Indoor Air Comfort” certification scheme that ensures manufacturers, retailers and end-users that product quality in terms of emission of volatile organic substances meets the relevant legal and most voluntary requirements for the involved product groups.

The core value of the Indoor Air Comfort certification by Eurofins is:

- Simplifying what is complicated by combining all relevant emissions specifications in use in Europe if certification criteria are fulfilled,
- Brand protection by establishing a management tool for monitoring and - if relevant - for reducing VOC emissions from certified products by external surveillance in combination with factory production control,
- Use of a low emission label for marketing purposes,
- Increasing public trust by low limit values and high control intensity (external surveillance and regular re-testing).

The approach of the label is to create a harmonized umbrella standard for various materials, combining the mandatory and voluntary requirements in Europe into one single specification. The same methodology and analytical techniques, as specified in international standards, are used in testing procedures for all involved products. This approach is another step towards harmonization and simplification in contrast to earlier, industry or national specific testing methodologies.

You can obtain the Indoor Air Comfort certification for your products upon application. After a successful emissions test there will be a contract as well an initial audit before granting the certificate. Re-audits and re-testing will follow afterwards.

Galten, June 2023

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1 Scope and Application

This document contains specifications for building materials, decorative coatings and furniture with respect to certification and labelling with the labels Indoor Air Comfort or Indoor Air Comfort Gold.

The following materials are covered:

- Textile floorings,
- Resilient floorings,
- Wood-based floorings, skirting, decorative panels and doors,
- Thermal insulation,
- Suspended (acoustic) ceilings,
- Non wooden panels,
- Installation products,
- Sealants,
- Interior paints and varnishes,
- Resin based liquid applied floorings,
- Wall plaster,
- Wall papers and textile wall coverings,
- Furniture,
- Coatings for floor coverings,
- Product systems.

For any product which cannot be easily assigned to one of the above groups, an inquiry can be sent to ccs@eurofins.com.

2 Specifications

Classification of a product and issue of a certificate are based only on the results of emission testing and of the audits at the manufacturing sites. The emission test is performed after 3 days and after 28 days in a ventilated test chamber following EN 16516 or comparable international standards. Any test result is extrapolated to an air concentration in the European Reference Room (EN 16516).

Abbreviations used in these specifications are listed in Annex III.

3 Emissions Testing

3.1 Taking a Sample

Determination of emission behavior shall be performed on freshly produced material at the earliest point of time when the product is ready for dispatch or application - this date may include essential storage periods.

Taking a sample of a product for testing shall be performed according to EN 16516. The product sample shall be packaged, as specified below, as soon as possible after collection and, in any case, within the same working day. The product sample shall arrive in the laboratory not later than 14 days after the date of sampling.

The maximum time between date of production and start of a test in the laboratory (incl. storage, transport, and storage at testing laboratory) shall not exceed 8 weeks provided that the laboratory sample is stored in the specified packaging.

On-site wet-applied products coming in a closed container (can, cartouche) shall be tested not later than 4 months after production date.

Samples taken shall be packaged airtight and be protected against contamination. A detailed documentation including sampling protocol shall follow the sample into the laboratory – templates will be supplied by Eurofins.

3.2 Preparation of a Test Specimen

Test specimen preparation prior to testing shall be performed as specified for the respective product – especially as defined in the respective EN product standard, as far as available. Specifications in national and international standards such as EN 16516, ISO 16000-11, EMICODE, EN 16402, M1, DIBt laboratory manual shall be taken into account.

Multi-layer systems are built up such as the manufacturer specifies for use at the construction site, including the required intermediate drying periods. If the manufacturers prepare the test specimen, then at least the top layer shall be installed at the testing lab just before start of the test.

Furniture is tested as a complete unit. In the case of large pieces of furniture, a representative subsample can be cut out, where the cut edges shall be sealed airtight before starting the test. The test results then shall be re-calculated to the whole unit.

3.3 Emissions Testing

Emission testing shall be performed in a test chamber made of stainless steel as specified in EN 16516 at $23 (\pm 1) ^\circ\text{C}$ in the test chamber and $50 (\pm 3) \% \text{ RH}$ in the inlet air. Ventilation rate shall be 0.5 air changes per hour.

Other ventilation rates are accepted in the range 0.25 - 1.5 air change per hour if the test result is recalculated to 0.5 air changes per hour.

In line with European standardization and the normative European Reference Room for emission testing, the following loading factors shall be applied:

Table 1: European Reference Room (EN 16516)

	Dimensions
Length x width x height	4 m x 3 m x 2.5 m
Surface floor or ceiling	12 m ²
Surface walls	31.4 m ²
Surface window	2 m ²
Surface door	1.6 m ²
Volume	30 m ³

Table 2: Loading factors for building materials (EN 16516)

Intended use	Loading factor
Ceiling or flooring	0.4 m ² /m ³
Walls (<i>after rounding the value</i>)	1.0 m ² /m ³
Ceiling and walls	1.4 m ² /m ³
Small surfaces e.g. a door or a window	0.05 m ² /m ³
Very small surfaces, e.g. sealants	0.007 m ² /m ³

Allowed deviation from these values in test chamber is 50 % to 200 % of required loading. In case of such a deviation, the test result shall be re-calculated to the above specified value.

3.4 Air Sampling

The emissions behavior is measured by sampling air from the outlet of the ventilated test chamber with sampling media and analytical procedures appropriate for the testing parameters as specified in EN 16516, ISO 16000-3 and -6. The limits of detection and quantification shall be applied as specified in EN 16516.

The test specimens shall remain stored in the test chamber during the whole testing period and shall be removed only after final air sampling from test chamber.

Air sampling shall be performed after 3 days and after 28 days in test chamber using Tenax TA adsorption tubes for determination of VOC emissions, on DNPH impregnated silicagel adsorption tubes for determination of volatile aldehydes, and on XAD-II sampling tubes for phthalates.

3.5 Air Analysis

All measured concentrations in the test chamber air are transferred to air concentrations in the European Reference Room.

3.5.1 VOC, SVOC

The analytical determination is performed as specified in EN 16516. Identification and individual quantification shall be performed for all appearing VOCs and SVOCs – but only at an air concentration in the European Reference Room of minimum 5 µg/m³ (as far as technically feasible), resp. of minimum 1 µg/m³ (as far as technically feasible) for carcinogenic VOCs (C1A and C1B).

Substances with a limit value are calibrated with their authentic calibration.

Substances without a limit value are quantified in toluene equivalents.

3.5.2 CMR Substances for French Regulations

Benzene and trichloroethylene are determined in the same manner as the other VOCs, but determination of the phthalates DBP and DEHP requires a supplemental air sampling and analysis with adsorption on XAD-II tubes, extraction and GC/MS analysis to achieve a reasonable detection limit.

3.5.3 Aldehydes

The analysis is performed in line with EN 16516 / ISO 16000-3.

3.5.4 Sum and Evaluation Parameters

Calculation of TVOC, TSVOC, R value and “sum of all VOCs without German LCI” shall be performed as specified in EN 16516.

TVOC is calculated by addition of all individual results of 5 µg/m³ or above in the interval from n-hexane to n-hexadecane (n-C6 - n-C16) on a slightly polar GC column, but after calculation of all individual substances in toluene equivalents, as specified in the harmonized test method EN 16516.

TSVOC is calculated by addition of all individual results of 5 µg/m³ or above in the interval from n-hexadecane to n-docosane (> n-C16 - n-C22) on a slightly polar GC column, after calculation of all individual substances in toluene equivalents.

The individual concentrations of the substances with an LCI value shall be divided by the respective LCI value, and the sum of these quotients is the risk value R, which is different for the Belgian (RB) or the German (RD) list of LCI values, respectively:

$$R_B = \sum_{i=1}^n \left(c_i / LCI_i + \dots + c_n / LCI_n \right)$$
$$R_D = \sum_{i=1}^n \left(c_i / LCI_i + \dots + c_n / LCI_n \right)$$

4 Evaluation

4.1 Indoor Air Comfort

Indoor Air Comfort specification requires testing according to EN 16516 and the results shall not exceed the following limit values:

Table 3: Limit values Indoor Air Comfort

INDOOR AIR COMFORT	After 3 days	After 28 days	Unit
TVOC (EN 16516)	10 000	1000	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	100	µg/m ³
TSVOC	-	100	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A or A+	-
Formaldehyde	-	60	µg/m ³
Acetaldehyde	-	200	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

4.2 Indoor Air Comfort Gold

Indoor Air Comfort specification requires testing according to EN 16516 and the results shall not exceed product specific limit values as defined in Annex I.
Certification of construction products is only possible for product types listed in Annex I.

5 Certification Contract

A contract is signed by the manufacturer and certification body including scope and content of certification.

6 Audit / Requirements for Factory Production Control

An approved inspector shall inspect the production processes on-site and the Factory Production Control as far as relevant for the emission of volatile organic compounds from the finished product.

During the audit, samples of products for emissions testing shall be taken (except during an initial audit, which is done directly after an initial testing), in accordance with the product specific requirements for sampling.

An audit report will be compiled containing all findings, recommendations and non-conformities.

The manufacturer shall establish, document and maintain a Factory Production Control (FPC) system to ensure that the subsequent products placed on the market conform to the characteristics of the tested worst case products. The FPC system shall consist of procedures, regular internal audits and tests and/or assessments and the use of the results to control raw materials or components, equipment, the production process and the finished products.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system documentation shall ensure a common understanding of the Indoor Air Comfort (Gold) Specification and shall enable continuous compliance of the certified products with the Indoor Air Comfort (Gold) limit values.

Factory Production Control therefore brings together operational techniques and all measures allowing continuity and control of the conformity of the product with the Indoor Air Comfort (Gold) specifications. Its implementation may be achieved by controls and tests on raw materials, processes and finished products as well as by regular controls of measuring and manufacturing equipment, and by making use of the results thus obtained.

6.1 General Requirements

A Quality Management System (QM System) shall be implemented; including written procedures covering below topics. A history of changes of the procedures shall be available. The QM System could be a self-defined system or follow the requirements of the ISO 9001 standard.

An ISO 9001 certification is helpful, but not required; external QM reports could be reviewed during an Indoor Air Comfort (Gold) audits.

Quality and production related outsourced processes shall be announced to Eurofins including valid proof of monitoring suppliers.

Changes in certified products, product groups, composition of products or raw materials as well as changes of raw material suppliers shall be announced to Eurofins immediately. The manufacturer shall establish a procedure to inform Eurofins in case of such changes.

6.2 Assignment of Responsibilities / Staff

The manufacturer shall appoint a person responsible for Factory Production Control (FPC). This responsibility shall be documented.

Training plans for new and existing employees, especially regarding quality-related topics, shall be established and respected. Establishing a skill matrix and/or a competence matrix is recommended.

6.3 Data Storage

A written procedure describing data storage shall be established. Quality and production data and documents shall be stored for minimum 7 years.

6.4 Complaints

A system for registration and handling of complaints shall be available including a written procedure about complaint handling. The manufacturer shall have the possibility to generate overviews of complaints for a certain time period and complaints concerning odor/emission shall easily be identifiable, for example by using complaint categories. Emission and odor related complaints will be reviewed during the Indoor Air Comfort (Gold) audit including related established preventive and corrective actions.

6.5 Control of Raw Materials

The specifications for all incoming raw materials shall be documented; including an audit plan for ensuring their conformity with the certified product range. In determining the checks required, consideration shall be given to the control exercised by the supplier and the documented evidence of conformity. The manufacturer shall ensure, that it is not possible to use non-conforming raw materials in certified products and shall define how to treat non-conforming raw materials.

6.6 Production Process Control

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure that use, wear or failure does not cause inconsistency in the manufacturing process. Audits and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures, the records shall be retained for the period defined in the manufacturer's FPC procedures. Major repairs of production equipment, which might have an impact on product quality, shall be documented. In order to manufacture products, which conform to the Indoor Air Comfort (Gold) Certification requirements, the manufacturer shall control and monitor production processes and shall perform audits and tests as described in their production control system documentation within the QM System. Changes and deviations of production parameters within running production shall be documented including information on responsible person and reason. Product recipe/construction and composition parameters shall be defined and documented including tolerances and a history of changes of recipes.

6.7 Testing / Evaluation of Finished Products

The manufacturer shall establish testing procedures to ensure and document consistency of manufactured products and shall define tolerances for production processes and finished products. Those tolerances shall at least follow the product standard or, if there is no product standard available, be chosen in a way to assure a consistency of VOC-emission related properties. If in doubt, the sufficiency of the chosen tolerances can be agreed on with the Certification Body. This ensures that the composition and by that the emission properties of each finished product remains the same as that subject to initial and annual emission testing within the Indoor Air Comfort (Gold) Certification.

Testing shall be of a type and a frequency to be defined and documented by the manufacturer and appropriate to ensure consistent compliance with the Indoor Air Comfort (Gold) requirements. Type of tests are depending on the type of product and shall be relevant for product emission properties like for example organic content (including VOC), thickness, density or viscosity. Tests shall be performed with suitable test equipment and suitable precision.

Test results shall be appropriately documented and traceable. It is recommended to make sure that those results are cleared by the FPC responsible.

The manufacturer shall have written procedures which specify how non-conforming products shall be dealt with. Any such events shall be recorded as they occur. The testing status of the product shall be identified by means which clearly indicate the conformity or non-conformity of the product with regards to the tests performed. The manufacturer shall ensure, that it is not possible to deliver non-conforming certified products.

6.8 Test Equipment / Calibration / FPC

Test equipment shall be calibrated and/or checked against equipment or standard materials traceable to relevant internationally or nationally recognized reference standards in accordance with a calibration plan. Calibration procedures shall be defined in the QM System including minimum frequencies of calibration. Precision of test equipment and calibration shall be suitable in relation to defined tolerances.

6.9 Traceability / Marking / Documentation

It is the manufacturer's, or the manufacturer's agent's, responsibility to keep full records of individual products or product batches, including their related manufacturing details and characteristics and to keep records of to whom these products or batches were first sold. Best practice would be a traceability from batch of finished product back through production to batches of used raw materials.

The manufacturer shall ensure that only certified products are labelled with the Indoor Air Comfort (Gold) logo.

7 Certification

The certification is the final step in the application procedure for the labels Indoor Air Comfort and Indoor Air Comfort Gold.

This final step consists of an evaluation of the available documents such as the test report of the laboratory and the audit report. The certification report combines the audit report and the analytical test report(s) of the tested sample(s). The certification report is an essential element of the certification of the product(s).

All emission test results are checked for compliance. Based on all available facts the final decision on granting a certificate is made.

If the emission test results are not in compliance with the required specifications, then a laboratory test report will be issued, but a certificate cannot be granted.

Validity of a certificate is 5 years from the date of issue if the regular re-audit and re-testing (see point 9) do not show critical non-conformities. The date of issue is the date, when the certificate is created.

8 Repetition of testing and audits

To maintain certification, repetition of product emission testing and audit of production facilities is required on an annual basis for both Indoor Air Comfort and Indoor Air Comfort Gold.

In case the same product (group), based on identical recipe and the same raw materials, is manufactured in different factories, the audit can be performed on a multi-annual basis after the initial audits, which will be defined in an audit plan. At least one factory shall be inspected per year.

In case there were no non-conformities during the past 3 years and there have not been changes in production or factory production control, the certification body can offer to perform the audit every 2 years. However, as soon as new non-conformities or changes in production or factory production control occur, the audit shall be performed on an annual basis again.

If a product is no longer in compliance with the required specifications after the re-test, then this will be treated as a non-conformity. The Certification Body will define a period until this non-conformity needs to be solved including elimination of the emissive source and further re-testing.

9 Transfer of the Certification to a Private Label Customer

Companies manufacturing Indoor Air Comfort certified products have the possibility to transfer the Indoor Air Comfort Certification to their Private Label Customers. The product(s) sold to the Private Label Company must be identical to the Indoor Air Comfort Gold certified product in its (their) composition and way of manufacturing. Both Private Label Company and the Original Manufacturer shall sign a declaration of consent and conformity. A separate certification contract is signed by the Private Label Company and Certification Body including scope and content of certification. Private Label Indoor Air Comfort Certificates receive their exclusive numbering, thus assuring that a traceability to the Original Manufacturer is not possible by the market actors. Private Label Indoor Air Comfort Certificates need to be renewed yearly and have a validity of 14 months.

10 Use of the Label

After successful first certification, Indoor Air Comfort and Indoor Air Comfort Gold labels can be used by the customer as discrete label.

Furthermore, the certification is accepted by many organizations and can be used for applying for other labels (see Annex II).

The use of the Indoor Air Comfort and Indoor Air Comfort Gold Label is governed by a valid certification contract concluded between the applicant and Eurofins. The Indoor Air Comfort and Indoor Air Comfort Gold certification includes regular audit of the production site(s) and annual testing of the certified products.

The applicant is authorized to:

- disclose the obtained certification in its business papers, homepages, social media and other ways of correspondence referring to certified products;
- use the Indoor Air Comfort and Indoor Air Comfort Gold Label on the label and packaging of certified products;
- use the Indoor Air Comfort and Indoor Air Comfort Gold Label on delivery, technical and marketing documents of certified products.

The applicant shall:

- make sure that the Indoor Air Comfort and Indoor Air Comfort Gold Label is only used when referring to certified products;
- avoid giving the impression that non-certified products are certified as well;
- not transfer the right to use the Indoor Air Comfort and Indoor Air Comfort Gold Label to another legal entity of the same corporation, unless this is agreed with Eurofins;
- not transfer the right to use the Indoor Air Comfort and Indoor Air Comfort Gold Label to a private label customer; in case this is needed, a separate contract between Eurofins and the private label customer would be mandatory;
- ask Eurofins in case of doubt how to use the Indoor Air Comfort and Indoor Air Comfort Gold Label.

By default, Eurofins will provide a coloured Indoor Air Comfort and Indoor Air Comfort Gold Label version in different file formats. A black and white version is available upon request.

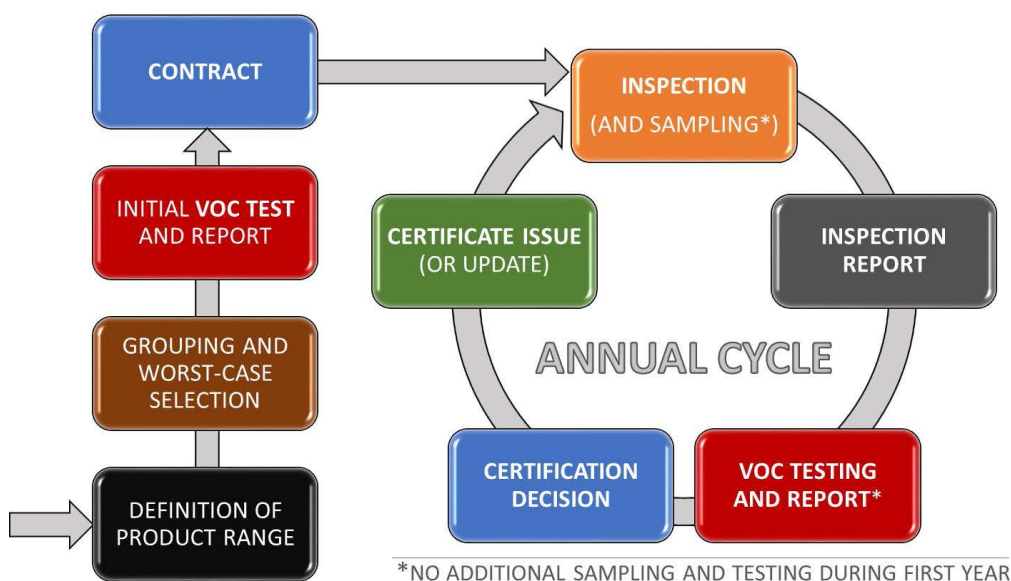
The applicant is entitled to use the Indoor Air Comfort and Indoor Air Comfort Gold Label as mentioned above.

The Indoor Air Comfort and Indoor Air Comfort Gold Label shall:

- not be changed in terms of colour, shape, text or other appearance; only size can be adjusted if the proportions of the original label remain;
- have a legible font defining minimum size of the label;
- have an appropriate resolution with smooth and sharp lines and text;
- not be covered or partly covered by any other text or graphics.

11 Summary of the Procedure

- Definition of product range, grouping of products and selection of worst case product;
- Testing of worst case product in a ventilated test chamber according to EN 16516;
- Reporting and evaluation of test results;
- Contract between manufacturer and certification body, including agreements on actions for maintaining low VOC emissions from labelled products, e.g. on details of production, factory production control, quality documentation;
- Initial audit of relevant manufacturing site(s);
- Audit report including the relevant documentation;
- Certification process, including evaluation of test and audit reports, granting or denying the certificate according to the criteria;
- Periodic external audits by Eurofins incl. survey of emission relevant elements of quality documentation;
- Periodic re-testing for ensuring reliability of claims on low emissions;
- Continuous monitoring and improvement of specifications, testing and audit methodology.



12 Anti Bribery Policy

The position of Eurofins towards bribery is clearly described in the Eurofins Anti Bribery Policy:

“We are resolutely opposed to bribery and corruption regardless of its form.”

Eurofins is committed to conducting their business with honesty and integrity, and are therefore committed and adhere to a zero-tolerance approach towards any form of bribery and corruption.

The Eurofins Anti Bribery Policy in its current version is available under:

<https://www.eurofins.com/about-us/corporate-sustainability/governance/eurofins-core-compliance-documents/>

Annex I: Product Specific Requirements

A classification in compliance with Indoor Air Comfort GOLD requires that the emissions comply with the following limit values.

A.1 Textile Floorings

Loading factor: 0.4 m²/m³

Back and edges are sealed airtight.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
TVOC (AgBB)	-	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Limit values of the PRODIS/GUT system**	-	Below all limit values	-
Sum of VOC without German LCI and non-identified VOC	-	50	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde, Acetaldehyde, each	-	4	µg/m ³
Octanal	-	5	µg/m ³
Other aldehydes, each ***	-	8	µg/m ³
4-Vinylcyclohexene	-	2	µg/m ³
Styrene	-	2	µg/m ³
Naphthaline	-	3	µg/m ³
4-Phenylcyclohexene	-	5	µg/m ³
Tetrachloroethylene	-	10	µg/m ³
2-Ethylhexanoic acid	-	15	µg/m ³
Toluene	-	20	µg/m ³
1,4-Dichlorobenzene	-	40	µg/m ³
Vinylacetate	-	40	µg/m ³
Xylene	-	40	µg/m ³
Ethylbenzene	-	40	µg/m ³
Phthalates: DEP, DOP and DMP each	-	1	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

** See <http://www.pro-dis.info/emission-test00.html?&L=0>

*** Special requirement of the Blue Angel DE-UZ 128.

A.2 Resilient Floorings

Loading factor: 0.4 m²/m³

Back and edges are sealed airtight.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	160	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	100	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	-	10	µg/m ³
Acetaldehyde	-	200	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.3 Wood-based Floorings, Skirting, Decorative Panels and Doors

Loading factor:

Floor or ceiling,	0.4 m ² /m ³
Walls / Pitched roof	1.0 m ² /m ³
Doors, skirting	0.05 m ² /m ³
Built-in cabinetry and -furniture	0.5 m ² /m ³

Back and edges are sealed airtight, and T-shaped joints are included for wooden floorings, as specified in DIBt laboratory manual.

Size of the test chamber for wood based flooring and panels: minimum 225 liters.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	160	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	50	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	-	10	µg/m ³
Acetaldehyde	-	200	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.4 Thermal Insulation

Loading factor:

Ceiling or floor	0.4 m ² /m ³
Walls / Pitched roof	1.0 m ² /m ³
Combination of ceiling and walls	1.0 m ² /m ³
Tubes, channels, cables, tanks, each	0.4 m ² /m ³

Back and edges are sealed airtight.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	50	µg/m ³
TSVOC	-	20	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	-	10	µg/m ³
Acetaldehyde	-	200	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.5 Suspended (Acoustic) Ceilings

Loading factor:

Ceiling 0.4 m²/m³

The sample shall be cut into a squared test specimen. Minimum one factory made edge shall be exposed to chamber air. The other edges should be sealed air tight. The sample shall be placed on one of the covered edges to allow emission from both front and back.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	50	µg/m ³
TSVOC	-	20	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	-	10	µg/m ³
Acetaldehyde	-	120	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.6 Non-wooden panels

Scope:

gypsum boards, mineral and resin based panels

Loading factor: 1.0 m²/m³

Back and edges are sealed airtight.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	60	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	40	µg/m ³
TSVOC	-	20	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	50	10	µg/m ³
Acetaldehyde	50	50	µg/m ³
Sum of form- and acetaldehyde	50	-	ppb

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.7 Installation Products

Scope:

Flooring adhesives, tile adhesives, tile mortars, leveling compounds, primers, underlays.

Loading factor:

Floor 0.4 m²/m³

Wall 1.0 m²/m³

Application amount and sample preparation:

Application of the ready-to-use mixture on glass with a trowel, in a model, or test as a plate, details and amount as specified in EN 16516, ISO 16000-11 and GEV testing protocol.

Flooring adhesives and primers:

Test with maximum application amount from the technical datasheet, but minimum application defined in GEV test method shall be used.

Leveling compounds, tile adhesives and tile mortars:

Test with 3 mm application amount according to GEV test method. Wall products can be tested according to category A.11 Wall Plaster. In any case, the relative humidity inside the test chamber during sampling after 3 days shall be in the range of 50 ± 5%.

Any deviation shall be recorded in the test report.

Underlays:

Edges shall not be sealed.

Installation products shall be solvent-free according to TRGS 610. Installation products may contain solvents below 0.5 % w/w, which may result from contamination of the raw materials being used. Proof shall be provided by declaration.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	500	60	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	40	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	50	10	µg/m ³
Acetaldehyde	50	50	µg/m ³
Sum of formaldehyde and acetaldehyde	50	-	ppb
Other aldehydes (detectable with ISO 16000-3)	-	60	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.8 Sealants

Scope:

Joint sealants

Loading factor: 0.007 m²/m³

Apply the sample without bubbles into a profile made of stainless steel material with 3 mm depth and 10 mm width and flatten the surface. The length of the profile shall correspond to the required loading factor and the size of the test chamber.

Sealants shall be solvent-free according to TRGS 610. Sealants may contain solvents below 0.5 % w/w, which may result from contamination of the raw materials being used.

Proof shall be provided by declaration.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	750	20	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	40	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	50	10	µg/m ³
Acetaldehyde	50	50	µg/m ³
Sum of formaldehyde and acetaldehyde	50	-	ppb

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.9 Interior paints and varnishes

This product group does not define requirements for coatings for the floor. These are defined in A.10 and A.14.

Additional requirements for a license for Indoor Air Comfort GOLD:

VOC/SVOC content requirements:

The maximum content of VOCs and SVOCs shall not exceed below limit values as determined by testing according to ISO 11890-2:

Subcategory	Subcategory denotation according to Directive 2004/42/EC	VOC limits (g/l ready to use)	SVOC limits (g/l ready to use)
A	Interior matt walls and ceilings (Gloss < 25@60°)	10	30 ¹ / 40 ²
B	Interior glossy walls and ceilings (Gloss > 25@60°)	40	30 ¹ / 40 ²
D	Interior trim and cladding paints for wood and metal	80	50 ¹ / 60 ²
E	Interior trim varnishes and woodstains, including opaque woodstains	65	30
F	Interior minimal build woodstains	50	30 ¹ / 40 ²
G	Primers	15	30 ¹ / 40 ²
H	Binding primers	15	30 ¹ / 40 ²
I	One-pack performance coatings	80	50 ¹ / 60 ²
L	Decorative effect coatings	80	50 ¹ / 60 ²

(¹) White paints and varnishes

(²) Tinted paints and varnishes

Emission test requirements:

Loading factor:

Walls	1.0 m ² /m ³
Ceiling	0.4 m ² /m ³
Small surfaces	0.05 m ² /m ³

The minimum application amount used for testing shall follow the amount stated by the manufacturer in the technical datasheet of the product, but in any case it shall not be lower than the amount defined in EN 16402.

In case of multi-layer coatings, either the individual constituents or the whole system can be subject to certification, depending on the intended use and the related testing scenario.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	40	µg/m ³
TSVOC	-	50	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	50	10	µg/m ³
Acetaldehyde	50	50	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.10 Resin Based Liquid Applied Floorings

Resin based floorings are liquid applied floorings.

Loading factor:

Floor: 0.4 m²/m³

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	100	µg/m ³
TSVOC	-	50	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	-	10	µg/m ³
Acetaldehyde	-	200	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.11 Wall Plaster

Scope:

Mineral, gypsum and dispersion based wall plasters for interior application.

Loading factor:

Wall 1.0 m²/m³

Application amount according to technical datasheet, but minimum application amounts shall be:

Mineral- and gypsum-based base plasters 3 mm layer thickness

Mineral- and dispersion-based finishing and top plasters 2.5 kg/m²

Wall filler 300 g/m²

Application on glass with a trowel, details and amount as specified in EN 16516, ISO 16000-11 and GEV testing protocol. A preconditioning of 3 days in a separate pre-conditioning chamber is allowed, except for the wall fillers. The relative humidity inside the test chamber during sampling after 3 days shall be in the range of 50 ± 5%. Any deviation shall be recorded in the test report.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	750	60	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	40	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	50	10	µg/m ³
Acetaldehyde	50	50	µg/m ³
Sum of formaldehyde and acetaldehyde	50	-	ppb
Other aldehydes (detectable with ISO 16000-3)	-	60	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.12 Wall Papers and Textile Wall Coverings

Scope:

Wall papers, that are permanently fixed to the wall and textile wall coverings or partition walls, that are not permanently fixed to the building.

Loading factor:

Wall 1.0 m²/m³

Back and edges are sealed airtight by taping the sample to an inert plate by an aluminum tape.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	100	µg/m ³
TSVOC	-	50	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	-	10	µg/m ³
Acetaldehyde	-	200	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.13 Furniture

Scope:

Free standing furniture based on wooden and other panels. Upholstered furniture is not within the scope of this specification.

Loading factor:

A complete piece of furniture is tested and the results are recalculated to an area specific ventilation rate of 1.0 m³/(m²h). Testing of components of the furniture is possible, if representative components can be selected.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	3 000	160	µg/m ³
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	100	µg/m ³
TSVOC	-	30	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
Acetaldehyde	-	30	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.14 Coatings for floor coverings

This product type includes onsite applied products for wooden floor surface treatments, as well as lacquers, finishes and oils for mineral floors and resilient floor coverings:

Additional requirements for a license for Indoor Air Comfort GOLD:

VOC content requirement: max. 5 % (according to GEV requirements)

Emission test requirements:

Loading factor:

Floor 0.4 m²/m³

The minimum application amount used for testing shall follow the amount stated by the manufacturer in the technical datasheet of the product, but in any case it shall not be lower than the amount defined in the GEV test method:

Water-based parquet lacquers:	150 g/m ²
Water-based joint fillers for parquet:	100 g/m ²
Water-based parquet primers:	100 g/m ²
Oils for parquet and mineral floors:	25 g/m ²
Water-based UV-curing lacquers:	150 g/m ²
UV-curing lacquers (100 % solids content):	50 g/m ²
Water-based lacquers for mineral floors:	100 g/m ²
Water-based impregnation agents for mineral floors:	100 g/m ²
Water-based lacquers for resilient flooring:	50 g/m ²

Application on oak wood as for DIBt testing (Ü-mark) is accepted. Indoor Air Comfort certified products can be pre-conditioned during 3 days. In case of multi-layer coatings, either the individual constituents or the whole system can be subject to certification, depending on the intended use and the related testing scenario.

INDOOR AIR COMFORT GOLD	After 3 days	After 28 days	Unit
TVOC (EN 16516)	1 000	100	µg/m ³
R _B value (based on EU LCI and Belgian LCI values)	-	1	-
R _D value (based on German LCI values)	-	1	-
Sum of VOC without German LCI and non-identified VOC	-	40	µg/m ³
TSVOC	-	50	µg/m ³
Sum of carcinogens (C1A, C1B) *	10	-	µg/m ³
Any individual carcinogens (C1A, C1B) *	-	1	µg/m ³
4 CMR substances as specified in the French regulations, each	-	1	µg/m ³
French VOC emission class	-	A+	-
Formaldehyde	50	10	µg/m ³
Acetaldehyde	50	50	µg/m ³

* As far as detectable with EN 16516 / ISO 16000-3/-6 test methods

A.15 Product Systems

Scope:

- Floor or wall systems made of e.g. top covering, possibly underlay, installation products, and possibly sub construction (subfloor),
- Raised access floors.

Loading factor:

Walls 1.0 m²/m³

Ceiling or floor 0.4 m²/m³

Installation according to specifications of the manufacturer, including all intermediate drying periods. The test specimen can be prepared by the manufacturer, as long as at least the top layer is installed in the testing lab immediately before starting the test.

Criteria and limit values:

The specifications for the used top layer apply to the whole system. If the top layer is e.g. a coated floor covering, then the specifications of the floor covering apply and not of the coating.

Annex II: Combined schemes and regulations

Indoor Air Comfort Gold is combining limit values from various schemes and requirements. The current versions of the respective requirements at the time of publishing the Indoor Air Comfort Gold specification were used. Other requirements not related to VOC product emissions, like for example content of certain substances or odor are not combined or evaluated. Following limit values for VOC emissions are considered in the product specific categories mentioned in Annex I:

Label or regulation	A1: Textile floorings	A2: Resilient floorings	A3: Wood based floorings, skirting, decorative panels and doors	A4: Thermal Insulation	A5: Suspended (acoustic) ceilings	A6: Non-wooden panels	A7: Installation products	A8: Sealants	A9: Interior Paints and Varnishes	A10: Resin based liquid applied floorings	A11: Wall plaster	A12: Wall papers, textile wall coverings	A13: Furniture	A14: Coatings for floor coverings
Belgian regulation	X	X	X ⁴				X			X				X
France VOC class A+	X	X	X	X	X	X	X	X	X	X	X	X		X
Germany (AgBB/ABG)	X	X	X	X	X	X	X	X	X	X	X	X		X
Italian CAM Edilizia	X	X	X	X	X	X	X	X	X	X	X	X		X
EU Taxonomy Regulation	X	X	X	X	X	X	X	X	X	X	X	X		X
LEED (ACP)	X	X	X	X	X	X	X	X	X	X	X	X		X
BREEAM New Construction	X	X	X	X	X	X	X	X	X	X	X	X		X
WELL Building	X	X	X	X	X	X	X	X	X	X	X	X		X
DGNB	X	X	X				X	X		X				
SKA Rating	X	X	X	X	X	X	X	X	X	X	X	X		X
French HQE certification	X	X	X	X	X	X	X	X	X	X	X	X		X
EMICODE EC1Plus						X	X	X			X			X
Blue Angel; DE-UZ	128	120	176 ²	132	132		113 ³	123	12a ⁵		198		38	12a ⁵
GUT	X													
EU ecolabel			X						X				X	X

Label or regulation	A1: Textile floorings	A2: Resilient floorings	A3: Wood based floorings, skirting, decorative panels and doors	A4: Thermal Insulation	A5: Suspended (acoustic) ceilings	A6: Non-wooden panels	A7: Installation products	A8: Sealants	A9: Paints, varnishes, floor coatings	A10: Resin based liquid applied floorings	A11: Wall plaster	A12: Wall papers, textile wall coverings	A13: Furniture	A14: Coatings for floor coverings
Austrian Ecolabel, UZ	35	42	07 ⁴										06	
Austrian Baubook	X	X	X	X			X	X		X				
M1	X	X	X	X	X	X	X	X	X	X		X		X
Danish Indoor Climate Label (Emission Class 1)	X	X	X	X	X	X	X	X	X	X	X	X		X
BVB (Sweden)	X	X	X	X	X	X	X	X	X	X	X	X		X
Miljöbyggnad (Sweden)	X	X	X	X	X	X	X	X	X	X	X	X		X
Nordic Swan	X	X	X		X	X	X	X	X				X	X
Eco Product Norway	X	X	X	X	X	X	X	X	X	X	X	X		X
SINTEF, Norway	X	X	X			X	X	X	X	X	X			X
Cradle to Cradle	X	X	X	X	X	X	X	X	X	X	X	X		X
very low emitting products according to EN 16798-1	X	X	X	X	X	X	X	X	X	X	X	X		X
Singapore Green Label	X	X	X	X	X	X	X	X	X	X	X	X		X
Global GreenTag	X	X	X	X	X	X	X	X	X	X		X		X
FEMB													X	
Declare 2.0	X	X	X	X	X	X	X	X	X	X	X	X		X

Special regulations: 2) except doors; 3) for underlays DE-UZ 156; 4) not for doors and decorative panels; 5) emission requirements, only for varnishes

Annex III: Abbreviations

AgBB	Ausschuss zur gesundheitlichen Bewertung von Bauprodukten (Committee for Health-related Evaluation of Building Products)
BBP	Butyl benzyl phthalate
CMR	Carcinogenic, Mutagenic or Toxic for Reproduction
DBP	Dibutyl Phthalate
DEHP	Di(2-ethylhexyl) phthalate
DEP	Diethyl phthalate
DIBt	Deutsches Institut für Bautechnik
DMP	Dimethyl phthalate
DNPH	2,4-Dinitrophenylhydrazine
EN	European Norm (European Standard)
EU	European Union
GC	Gas Chromatography
GC/MS	Gas Chromatography – Mass Spectrometry
GEV	Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.; Organisation administrating the EMICODE label
GUT	Association of Environmentally Friendly Carpets e.V. (Gemeinschaft umweltfreundlicher Teppichboden)
ISO	International Organization for Standardization
LCI	Lowest Concentration of Interest
NMP	1-methyl-2-pyrrolidone
PRODIS	PRODuct Information System of the European Carpet Industry
R value	Risk Value
REACH	Regulation of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals
RH	Relative Humidity
SVHC	Substances of Very High Concern
SVOC	Semi Volatile Organic Compounds
TSVOC	Total Semi Volatile Organic Compounds
TVOC	Total Volatile Organic Compounds
VOC	Volatile Organic Compounds
XAD-II	Hydrophobic cross-linked polystyrene copolymer resin, a polymeric adsorbent

Annex IV: Revision table

The table below lists the substantial content changes in comparison to the previous version of the specifications. Editorial changes are not specifically listed.

Part	Revision
Front page	Change of address of certification body to Eurofins in Denmark
6.1	More detailed information on changes that shall be reported to Eurofins
6.4	As long as there are other ways to identify odour/emission related complaints, complaint categories for odour/emission are now optional
6.5	Sentence concerning a procedure to inform Eurofins on changes in raw materials deleted, because this is now defined in 6.1.
6.7	More detailed information on tolerances
7	Possibilities to define date of issue of the certificate.
8	Changed “biannually” to “every two years” Added detailed information on rules on frequency of routine audits
A.9	Changed group name into “Interior paints and varnishes”
A.9	Moved product type “coatings for floor covering” to A.14
A.9	Added EN 16402 as reference for minimum application amount.
A.9	Changed limit value for Sum of VOC without German LCI and non-identified VOC after 28 days to 40 µg/m ³ .
A.14	Added product type “Coatings for floor coverings”
A.15	Moved “Product Systems” from A.14 to A.15
Annex II	Added DE-UZ 12a to the category A9 and A14 (emission requirements, only for varnishes)
Annex II	Added SINTEF, Norway

