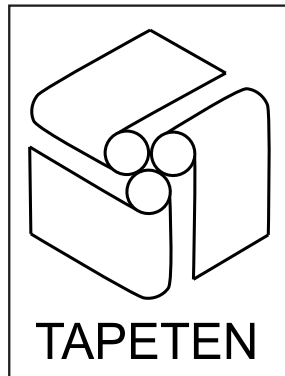




GÜTEZEICHEN



Wallpapers

Quality Assurance

RAL-GZ 479

Edition January 2011



Publisher:

RAL German Institute for Quality assurance
and Certification
Siegburger Straße 39
D - 53757 Sankt Augustin
Phone: ++49 2241 16 05-0
Fax: ++49 2241 16 05 11
E-Mail: RAL-Institut@RAL.de
Internet: www.RAL.de

Any reproduction in whole or in parts is prohibited.

All rights, including translation,
reserved by RAL.

© 2011, RAL, Sankt Augustin/Germany

Price-group 12

Copies may be obtained from:

Beuth-Verlag GmbH · Burggrafenstraße 6 · 10787 Berlin/Germany
Phone: ++49 30 26 01-0 · Fax: ++49 30 26 01 1260 · E-Mail: info@beuth.de · Internet: www.beuth.de
www.mybeuth.de

Wallpapers

**Quality assurance
RAL-GZ 729**

**Gütegemeinschaft
Tapete e. V.
(Quality Assurance Association for Wallpapers)
Berliner Allee 61
D - 40212 Düsseldorf
Tel.: (0211) 862 864 12
Fax: (0211) 862 864 13
E-Mail: info@tapeten.de
Internet: www.tapeten.de**



These quality and test specification have been elaborated by RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V. (RAL German Institute for Quality Assurance and Certification) in the framework of the principles governing quality marks in the course of a recognition procedure in association with the competent expert groups, commercial groups and authorities.

Sankt Augustin, January 2011

GERMAN INSTITUTE
FOR QUALITY ASSURANCE
AND CERTIFICATION

Table of Contents

Page

Quality and Test Specifications for Wallpapers

1	General Information	3
2	Scope	3
3	Quality Specifications	3
3.1	Technical Quality Requirements	3
3.2	Requirements for Health and Environmental Safety of Wallcoverings	3
3.2.1	Heavy Metals and Other Eco-Toxicologically Relevant Elements	3
3.2.2	Stabilizers	3
3.2.3	Plasticizers	3
3.2.4	Vinyl Chloride	4
3.2.5	Foaming Agents	4
3.2.6	Volatile Organic Compounds (VOCs)	4
3.2.7	Formaldehyde	4
4	Test Specifications	5
4.1	General Information	5
4.2	Initial Testing	5
4.3	Internal Monitoring	5
4.4	External Monitoring	5
4.5	Repeat Testing	5
5	Labelling	5
6	Alterations	5

Implementation Guidelines for the Award and Use of the Quality Mark Wallpapers

1	Quality criteria	6
2	Award	6
3	Use	6
4	Monitoring	6
5	Measures in the event of non-compliance	6
6	Appeal	7
7	Reaward	7
8	Changes	7
Sample 1	Implementation Guidelines	8
Sample 2	Implementation Guidelines	9
The Institution RAL		10

Quality and Test Specifications for Wallpapers

1 General Information

The Gütegemeinschaft Tapete e. V. – Quality Assurance Association for Wallpapers, reg. assoc. – has developed quality and test specifications for wallcoverings including not only technical quality requirements but also requirements and tests beyond that to be met by wallcoverings to ensure health and environmental safety.

2 Scope

These Quality and Test Specifications apply to the manufacture of wallcoverings according to EN 233 (Wallcoverings in roll form – Specification for finished wallpapers, wall vinyls and plastics wallcoverings), EN 234 (Wallcoverings in roll form – Specification for wallcoverings for subsequent decoration), EN 259 (Wallcoverings in roll form – Heavy-duty wallcoverings) and EN 266 (Wallcoverings in roll form – Specification for textile wallcoverings).

Other effective regulations apply to the field of building inspection according to EN 15102 (Decorative wallcoverings. Roll and panel form) as well as the requirements for using the CE mark.

3 Quality Specifications

3.1 Technical Quality Requirements

The EN standards mentioned above under “Scope” include requirements for

- Minimum water resistance,
- Washability,
- Colour fastness to light,
- Impact resistance,
- Fibre bonding,
- Symbol labelling,
- Fire resistance.

Quality-assured wallpapers must meet these quality and technical requirements.

The dimension requirements set forth in the standards shall not be applicable to quality assurance.

3.2 Requirements for Health and Environmental Safety of Wallcoverings

The following requirements have been established for wallcoverings beyond the technical standards. They are to make sure that no health and environmental risks arise from quality-assured products.

3.2.1 Heavy Metals and Other Eco-Toxicologically Relevant Elements

Quality mark users shall do without the use of heavy metal-containing pigments based on the following eco-toxicologically rel-

evant elements: arsenic, lead, cadmium, chromium (VI), mercury and selenium.

In order to make sure that even production-related impurities of the above-mentioned elements do not cause any hazards with respect to use and disposal the total contents of these elements in wallpapers shall be tested for compliance with the following limits – as listed in Table 1.

Table 1 Limits for Heavy Metals and Eco-toxicologically Relevant Elements

Element	Limit (mg/kg)
Arsenic	≤ 3
Lead	≤ 20
Cadmium	≤ 3
Chromium (III-VI)	≤ 20
Chromium (VI)	≤ 20
Mercury	≤ 2
Selenium	≤ 10

The elements are to be determined by atomic emission spectroscopy (ICP-AES) or equivalent methods (ICP-MS, AAS) using microwave pressure digestion.

For a more detailed description of the method please see: MEININGHAUS, R., SALTHAMMER, T. & BAHADIR, M. (1996): A new method for the simultaneous determination of heavy metals in wallcoverings. Fresenius Journal of Analytical Chemistry, 354: 27 – 31.

For reasons of practicability, chromium shall be first determined as total chromium (oxidation states III – VI). In the case of total chromium contents greater than 20 mg/kg the sample shall also be tested for acid-soluble chromium (VI) according to EN 71, 1994, Safety of Toys, Part 3: Migration of certain elements.

An antimony determination shall be carried out above and beyond the requirements of DIN EN 15102. For reasons of practicability, the first step shall be a determination of the total antimony content. If the total antimony content exceeds 20 mg/kg the sample shall additionally be analyzed for acid-soluble on the basis of EN 71, 1994, Safety of Toys, Part 3: Migration of certain elements. The acid-soluble antimony content from production-related impurities in wallpapers shall be less than 20 mg/kg. As a general rule, antimony or antimony compounds must not be used in wallcoverings according to EN 233, EN 234, and EN 266.

3.2.2 Stabilizers

Stabilizers are needed to produce PVC wallpapers. Such stabilizers are based on metal-organic compounds such as, for example, compounds of calcium, zinc or barium. The total barium content in wallpapers shall be less than 500 mg/kg. Quality mark users shall not use lead, cadmium and organotin-containing stabilizers.

Written declarations from the manufacturers shall be verified.

Quality and Test Specifications

3.2.3 Plasticizers

Quality mark users may only use low-volatile plasticizers with a vapour pressure lower than 0.01 Pa at 25° C and a boiling point higher than 300° C at 1013 mbar.

Written declarations from the manufacturers shall be verified.

3.2.4 Vinyl Chloride

The method for determining vinyl chloride by and large corresponds to the method specified for foods and food packaging (Official Collection of test methods pursuant to Section 35 of the German LMBG (Lebensmittel- und Bedarfsgegenstände-gesetz – Food and other Commodities Act; 80-32-1 (EC): Examination of commodities, determination of the vinyl chloride-monomer content in commodities).

500 mg each of a pre-shredded wallpaper sample shall be introduced into a 10 ml headspace vial and sealed gas-tight by means of septum after adding 2 ml of dimethyl acetamide. After maintaining the temperature at 60° C for 2 hours a sample from the headspace of the vial shall be injected directly into the gas chromatograph by means of a vapour space injector, separated by means of a gas chromatograph and detected by means of a flame ionization detector (FID).

No vinyl chloride may be detectable using this method. The detection limit shall be 0.2 mg per kg of wallpaper = 0.2 ppm or lower.

3.2.5 Foaming Agents

Chemical blowing agents are used to foam PVC wallpapers. These blowing agents are products that decompose at elevated temperatures. At least one of the decomposition products is a gas (nitrogen) which then forms the foam structure.

The most frequently used chemical blowing agents are the so-called azo compounds which release nitrogen during heating or at elevated temperatures.

Azodicarbonamide is used to foam PVC plastisols in foam wallpapers. It fully decomposes during the production process. Plastic pellets filled with an organic blowing gas are used to foam acrylic wallpapers. They expand as a result of heat build-up and, thus, create the foaming effect. Reminders of these gaseous compounds remain in the foam after completion of production. They are not detectable during test chamber examinations conducted under residential living conditions.

No chlorofluorocarbons (CFCs) shall be used.

Written declarations from the manufacturers shall be verified.

3.2.6 Volatile Organic Compounds (VOCs)

Volatile organic compounds (VOCs) form part of the organic means of production required for the manufacture of wallpapers. Residual substances remaining in the product may be released into the ambient air under residential living conditions. In order to limit the emissions the member manufacturers of the Gütegemeinschaft Tapete e. V. (Quality Assurance Association for Wallpapers) undertake to have the samples applying for the Quality Mark tested for VOCs both quantitatively and qualitatively.

Due to the fact that an experimental determination of VOC emissions is rather costly, yet at the same time a high sample throughput must be guaranteed, one has not, for reasons of practicability, fallen back on the test chamber method. The test shall be performed following the VDA test method 277 "Nicht metallische Werkstoffe der Kfz-Innenausstattung – Bestimmung der Emissionen organischer Verbindungen" (Non-metallic materials for

automotive interiors – determination of emissions of organic compounds). The emission potential shall be given as carbon units of the sum of all signals provided by the emitted individual compounds after gas chromatographic separation and detection by means of a flame ionization detector (FID) against the reference substance toluene. The sample shall be introduced by means of static headspace analysis after maintaining the temperature at 100° C. A detailed description of the method can be found in MEININGHAUS, R., FUHRMANN, F. & SALTHAMMER, T. (1996): „A routine method for the determination of the TVOC content in wallcoverings using headspace gas-chromatography“, Fresenius Journal of Analytical Chemistry, 356: 344-347. The static headspace analysis does not show any direct correlation to test chamber examinations. However, a multitude of parallel measurements have been able to show that a VOC value of 100 µg/g does not result in the exceeding of a steady-state concentration of 80 µg/m³ in a 1 m³ test chamber at 23° C, a relative humidity of 45%, an air change rate of 1 h⁻¹ and a loading of the test chamber of 1 m² per m³. According to the state of the art a test chamber compensation value of 80 µg/m³ is to be considered as very low under the above-mentioned conditions.

The data shall be expressed in µg/g of wallpaper. Aromatic-containing and chlorinated solvent components shall be recorded separately. In doing so, the total percentage of aromatic hydrocarbons toluene, ethylbenzene and *o*-, *m*-, *p*-xylenes (TEX-1 aromatics) may not exceed 10 % of the total emission limit value. No benzene and chlorinated solvents may be detectable under the above test conditions. The calculation of the VOC value does not take into account the foaming agents permitted under para. 3.2.5 as so-called WOCs (Very Volatile Organic Compounds) because a disproportionately increased release of these substances occurs under the said test conditions – a fact that would result in unrealistic and unreproducible VOC values.

The following limits listed in Table 2 must be observed in total:

Table 2 Limits for VOCs

Substance	Content (µg/g)
VOC *)	100
TEX aromatics	10

*) without foaming agents permitted according to para. 3.2.5

3.2.7 Formaldehyde

Formaldehyde is a substance that exists in nature and has also been synthesized since the turn of the twentieth century. It is a colourless gas with a strong odour. It readily reacts with other substances and rapidly decomposes when exposed to UV radiation.

The joint report of the then Bundesgesundheitsamt (German Federal Health Office), the Bundesanstalt für Arbeitsschutz (Federal Institute for Occupational Safety and Health) and the Umweltbundesamt (Federal Environmental Agency) of 9 October 1984 established a benchmark of 0.1 ppm for formaldehyde in indoor environments.

For quality mark users the limit value has been set at ≤ 0.033 ppm.

Testing shall be done using the WKI bottle method. For this purpose, 50 pieces measuring 5 cm x 3 cm each are stored in gas-tight sealed 1 000 ml – PE – wide-neck bottles on 50 ml freshly distilled water at 40° C (modified WKI bottle method).

In order to eliminate adsorptively bound formaldehyde – which after a certain period of testing has no effect anymore on the steady-state concentration - fresh water is poured into the bottles after the initial 24-hour storage and afterwards stored for another 24 hours. Thereafter, the formaldehyde content of the water shall be determined. According to this testing a formaldehyde content of 8 mg/100 g of absolutely dry wallpapers corresponds to a test chamber compensation value of 0.05 ppm. (SALTHAMMER, T., SCHRIEVER, E. & MARUTZKY, R. (1993): Emission from wallcoverings: Test procedures and preliminary results. – Toxicological and Environmental Chemistry. 40: 121-131).

4 Test Specifications

4.1 General Information

The test specifications are divided into specifications regarding initial testing, internal monitoring, external monitoring and repeat testing.

Testing and monitoring are based on the Quality Specifications of this quality assurance plan.

4.2 Initial Testing

Initial testing is a prerequisite for award of the Quality Mark. All applicants for award of the Quality Mark must undergo initial testing. The Quality Committee arranges for the initial testing to be conducted. It requests independent inspection agencies to perform the tests.

Initial testing refers to the verification of compliance with the Quality and Test Specifications according to paragraphs 3.2. 1 to 3.2.7.

The applicant shall use the initial testing to provide evidence of a reliable internal monitoring scheme.

The person conducting the initial testing shall prepare a test report copies of which will be sent to the applicant as well as to the Quality Committee of the Gütegemeinschaft Tapete e. V. (Quality Assurance Association for Wallpapers).

4.3 Internal Monitoring

Each wallpaper manufacturer shall do the internal monitoring as required for compliance with the Quality and Test Specifications. Accurate records shall be kept of all internal monitoring activities. These records shall be maintained for five years and presented during external monitoring.

4.4 External Monitoring

The Quality Committee requests an independent inspection agency to conduct external monitoring.

External monitoring is usually performed once a year. It comprises the inspection of internal monitoring records as well as

the supervision of compliance with the Quality Specifications of this quality assurance plan. External monitoring refers to paragraphs 3.2.1 to 3.2.7.

The inspector shall prepare a test report on each external monitoring copies of which will be sent to the quality mark user as well as to the Quality Committee.

4.5 Repeat Testing

Should the external monitoring tests be failed repeat testing shall be performed. Should this repeat testing, however, be failed again the entire external monitoring shall be considered failed.

The extent and nature of the repeat testing will be determined by the Quality Committee.

The Quality Assurance Association shall be entitled to take additional measures in accordance with para. 5 of the Implementation Guidelines.

5 Labelling

A wallpaper that meets these Quality and Test Specifications shall be allowed to bear the Quality Mark shown below as soon as the manufacturer has been granted the right to use the Quality Mark by the Quality Assurance Association:



The use of the Quality Mark is exclusively governed by the Implementation Guidelines for the Award and Use of the Wallpaper Quality Mark.

6 Alterations

Alterations to these Quality and Test Specifications, including editorial ones, require the prior written approval of RAL. They shall come into force after an appropriate period of time by way of communication by the Board of the Quality Assurance Association to the quality mark users.

Implementation Guidelines for the Award and Use of the Quality Mark Wallpapers

1 Quality criteria

The quality criteria testified by the Quality Mark comprise the Quality and Test Specifications for Wallpapers. These are supplemented and updated in line with technical progress.

2 Award

2.1 The Quality Assurance Association for Wallpapers accords applicant manufacturers the right to show the Quality Mark Wallpapers.

2.2 Applications shall be made in writing to the Quality Assurance Association for Wallpapers, Germany, enclosing a Declaration of Acceptance bearing a legally binding signature for the applicant (Sample 1).

2.3 The Quality Association examines the applications it receives and appoints a sworn expert or state – accredited testing institution to test the applicant's products. Testing is performed in accordance with the Quality and Testing Guidelines in agreement with the Quality Committee. The sworn expert or testing institution may visit the applicant's premises, take product samples, and examine the documents and records mentioned in the Quality and Testing Guidelines. The sworn expert or testing institution issues a certificate for the test results and sends the certificate to the applicant and the Quality Association Executive. The appointed inspector must present his credentials before commencement of testing. All costs of testing are borne by the applicant.

2.4 If the products pass, the Quality Assurance Association Executive, acting at the suggestion of the Quality Committee, awards the Quality Mark to the applicant. An award certificate is issued (Sample 2). If the products fail, the Quality Committee rejects the application, giving its reasons in a letter of rejection.

3 Use

3.1 Quality Mark users may use the Quality Mark solely for products complying with the Quality and Test Specifications for Wallpapers.

3.2 The Quality Assurance Association has the sole and exclusive right to commission the manufacture of means of printing the Quality Mark (metal stamps, embossing stamps, printing plates, lead seals, seal stamps, rubber stamps, etc.), to issue them or have them issued to Quality Mark users, and to make stipulations as to their use.

3.3 The Executive may make special stipulations for the use of the Quality Mark in product promotion and in promotion of the Quality Association in order to safeguard fair competition and to prevent misuse. Such stipulations shall not hinder individual promotion, which is subject to the same principles of fair competition.

3.4 In the event that the right to use the Quality Mark is withdrawn, the award certificate and all Quality Mark printing articles shall be surrendered without reimbursement; likewise in the event that the right to use the Quality Mark lapses by other means. The Quality Mark also can be used in a black and white version.

4 Monitoring

4.1 The Quality Assurance Association is entitled and obliged to monitor the use of the Quality Mark and compliance with the Quality and Testing guidelines. RAL shall be furnished with documentary proof of continuous monitoring by way of a monitoring agreement with a neutral testing institution.

4.2 Responsibility for ensuring compliance with the Quality and Test Specifications for Wallpapers lies entirely with Quality Mark users themselves. Users are placed under a duty to perform quality control. All factory controls must be conscientiously recorded. Quality Assurance Association – appointed inspectors may examine all such records at any time. Quality Mark users shall submit their quality – labelled products to monitoring by the Quality Committee or its appointee to the extent and in the frequency determined by the requirements of the Quality and Test Specifications. All costs of inspection, monitoring and testing shall be borne by Quality Mark users.

4.3 Inspectors may request and take samples from the premises of Quality Mark users at any time. Subject to the consent of the Quality Mark user, they may also take samples in distribution trade outlets or at customer premises. Samples shall be furnished as soon as possible on request. Inspectors may view the premises of Quality Mark users at any time during working hours.

4.4 In the event of failure to pass testing or of complaint in respect of a quality – labelled product, the Executive, acting in consultation with the Quality Committee through the Director of the Quality Association, shall order retesting. Quality Mark users can likewise request retesting.

4.5 Appointed inspectors and testing institutions shall issue a certificate for each set of test results. The Quality Association and the Quality Mark user shall each receive a copy.

4.6 In the event of unjustified complaint, the costs of inspection and testing shall be borne by the complainant; in the event of justified complaint, the costs shall be borne by the Quality Mark user.

5 Measures in the event of non-compliance

5.1 In the event that inspection and testing reveals non-compliance with the Quality and Testing Guidelines, the Quality Committee shall propose measures to the Quality Association Executive. According to the severity of the non-compliance, the available measures are as follows:

5.1.1 Additional requirements for self control,

5.1.2 increased independent control,

5.1.3 warning,

5.1.4 contractual penalty in the amount of 5 % of the order value of the non-complying delivered product, or € 500,-, whichever is the greater.

5.1.5 temporary withdrawal for a period of at least 12 months or permanent withdrawal of the right to use the Quality Mark.

5.2 A warning may be issued to the Quality Mark Holders who violate clause 3 or 4.

5.3 A contractual penalty of up to € 500,- may be imposed in each individual case instead of a warning. The contractual penalty shall be payable to the Quality Assurance Association within 14 days of the effective date of the notice.

5.4 The measures stipulated in Section 5.1 may be imposed in combination.

5.5 The affected party shall be given a hearing before any measures are imposed. Imposed measures enter into force on the date they become legally effective.

5.6 In urgent cases, the Director of the Quality Association may provisionally withdraw the right to use the Quality Mark with immediate effect. Such withdrawal must be confirmed by the Quality Association Executive within 14 days.

5.7 The penalty measures according to Section 5.1 – 5.5 become effective with legal validity.

5.8 In urgent cases, the Director of the Quality Association may provisionally withdraw the right to use the Quality Mark with immediate effect. Such withdrawal must be confirmed by the Quality Association Executive within 14 days.

6 Appeal

6.1 Quality Mark users may appeal against imposed measures within 4 weeks of notification. Appeals shall be submitted to the Quality Association Executive, who shall decide them in consultation with the Quality Committee.

6.2 If the Executive rejects an appeal, the appellant may apply to a tribunal for arbitration within four weeks of notification. Arbitration by tribunal is governed in detail by Section 11 of the Articles of the Quality Assurance Association.

7 Reaward

If the right to use the Quality Mark has been withdrawn, it cannot be reawarded before expiry of at least 3 months after withdrawal. The procedure is as stipulated in Section 2 of these Implementation Guidelines for the Award and Use of the Quality Mark Wallpapers. The Quality Association Executive may impose supplementary requirements.

8 Changes

These Implementation Guidelines and the samples they contain (Declaration of Acceptance, Award) are approved by RAL. Modifications to these Guidelines, including editorial changes, require prior written consent from RAL. Any such modifications shall enter into force a reasonable period after their announcement by the Quality Association Executive.

Declaration of Acceptance

The undersigned applies herewith to the Quality Assurance Association (Gütegemeinschaft Tapete e. V.) for:

- Membership, ^{*1}
- Award of the right to show ^{*1}
the RAL Quality Mark Wallpapers

The undersigned has read and understood, and acknowledges and accepts as binding:

- the Quality and Test Specifications for Wallpapers,
- the Articles of the Quality Assurance Association Wallpapers,
- the Articles Governing Use of the Quality Mark Wallpapers,
- the Implementation Guidelines including Samples 1 and 2.

Place, Date

(Stamp and Bindings Signature)

^{*1} cross as appropriate

Award

The Quality Assurance Association Wallpaper
(Gütegemeinschaft Tapete e. V.)
in accordance with The Test Report submitted to the Quality Committee

(Company)

as recognized by the RAL German Institute for Quality Assurance and Certification
(RAL Deutsches Institut für Gütesicherung und Kennzeichnung e. V.)
and registered as a collective trademark at the German Patent and Trade Office.

the Quality Mark for Wallpapers



Place

Date

Quality Mark for Wallpapers

Chairman

Managing Director



History

The "Reichsausschuss für Lieferbedingungen" (RAL) - Committee of the German Reich for Terms and Conditions of Sale - was founded in 1925 as a combined initiative of the German private sector and the German government of that time. The joint aim was the standardization and clear definition of precise technical terms of delivery. For this purpose, fixed quality standards and their control were needed - the system of quality assurance was born. Its implementation required the creation of an independent and neutral institution as a self-governing body of all parties active in the market. That was the moment of birth for RAL and ever since that time it has been the competent authority for the creation of quality labels.

RAL Today

RAL acts as an independent service provider in its fields of activity. It is recognized as a non-profit organization and organized in the legal form of a registered association. Its organs are Executive Committee, Board of Trustees, General Assembly of Members and the management.

RAL's independent and neutral position finds expression in the fact that the principles of its activities are established by the Board of Trustees which is composed of representatives from the leading organizations representing industry, consumers, agriculture, the federal ministries and other federal bodies. They have a permanent seat and vote on that body. In addition to them, the General Assembly of Members elects four quality assurance associations on the Board of Trustees as representatives of the RAL members.

RAL's Areas of Competence

- RAL creates quality labels
- RAL is responsible for registrations, agreements and RAL certificates

RAL DEUTSCHES INSTITUT FÜR GÜTESICHERUNG UND KENNZEICHNUNG E.V.
(RAL GERMAN INSTITUTE FOR QUALITY ASSURANCE AND CERTIFICATION)

Siegburger Straße 39, D-53757 Sankt Augustin, Phone: +49 (0) 22 41-16 05-0 Fax: +49 (0) 22 41-16 05-11
E-mail: RAL-Institut@RAL.de • Internet: www.RAL.de