
A-Z – Guideline of the Working Group ‘Adhesive Bonding DIN 2304’

Revision: 8, 14.11.2022

Foreword

This A-Z-Guideline is a compendium of the decisions of the “Working Group Adhesive Bonding DIN 2304”.

It complements the procedure for obtaining a certificate according to DIN 2304 and contains supplementary specifications, transitional provisions, restrictions and interpretations to the DIN 2304 standard and the applicable standards and regulations.

For the certification of companies according to DIN 2304 by the certification bodies participating in the working group DIN 2304, the application of the A-Z-Guideline is mandatory for the certification bodies and the companies to be certified.

The A-Z-Guideline is managed by the office of the working group and is updated continuously. Applications for inclusion of items must be sent in written form to the office via the certification bodies for forwarding to the working group.

The current A-Z-Guideline is published in the Onlineregister DIN 2304 (<https://www.din2304.de>). Only the version of the A-Z-Guideline published in the Onlineregister is binding.

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1. Revisions

Changes compared with the last revision are underlined. In the case of the specifications in this A-Z-Guideline, the date of the specification respectively or the last change are indicated in each case by the revision number. The revision number correspond to the meetings of the working group.

| Revision | Meeting | Date |
|----------|-------------------|----------------------------|
| 1 | 1. Meeting | 23.05.2018 |
| 2 | 2. Meeting | 20.11.2018 |
| 3 | 3. Meeting | 24.09.2019 |
| 4 | 4. Meeting | no Revision, not published |
| 5 | 5. Meeting | 27.04.2021 |
| 6 | 6. Meeting | no Revision, not published |
| 7 | 7. Meeting | 10.05.2022 |
| <u>8</u> | <u>8. Meeting</u> | <u>14.11.2022</u> |

2. Normative References

Applicable Documents

(last change: Revision 7)

The following additional standards and regulations apply in addition to DIN 2304-1. Unless otherwise stated, the current versions apply:

- DIN 2304-1
- DIN SPEC 2305-1
- DIN SPEC 2305-2
- DIN/TS 2305-3 (replaces DIN SPEC 2305-3)
- DVS 3311

3. Scope of application

Insulation glass panes

(last change: Revision 3)

DIN 2304 applies to the manufacture of insulating glass panes which are produced with the aid of adhesives and sealants.

Laminated safety glass

(last Change: Revision 3)

The production of laminated safety glass (e.g. glass laminate with PVB foil) itself is not subject to the regulations of DIN 2304. Further adhesive bonds or sealings of the laminated safety glass are subject to the standard.

Vulcanization

(last change: Revision 3)

The production of vulcanizates is not covered by DIN 2304

Composite materials

(last change: Revision 3)

DIN 2304 applies to the production of material composites (e.g. sandwich elements) with the aid of adhesives and sealants. The production of plywood is not covered by DIN 2304

FRP (Fibre Reinforced Plastics)

(last change: Revision 3)

The production of FRP (Fibre Reinforced Plastics) is not covered by DIN 2304.

Bonding of fibre composites is regulated in DIN SPEC 2305-2 "Bonding technology - Quality requirements for bonding processes - Part 2: Bonding of fibre composites" and is subject to DIN 2304-1.

If a bonded add-on element (e.g. fastener) is overlaminated during the manufacture of FRP, so that this additional lamination would also meet all the requirements of the bond on its own (e.g. in terms of strength and long-term resistance), this is considered to be part of the laminate. The fiber layers used for this purpose must be able to absorb all forces. If not all forces can be transferred by the covering plies, this joint is considered to be an adhesive bond and is subject to DIN 2304.

4. General

No specifications

5. Personnel Requirements

Personnel change of the ABC (resignation from the function)

(last change: Revision 3)

If the requirements of DIN 2304 are no longer fulfilled, the certification body must be informed immediately. Within two weeks, the company must submit a concept for ensuring that the bonding supervision by the ABC (Adhesive Bonding Coordinator) complies with the standards.

Qualification level of the ABC at S1 and S2

(last change: Revision 3)

For a transitional period, persons can also be designated as ABC who are only in training to become an EAE or EAS. If at the time of auditing there is only a registration for EAE or EAS training, the ABC must have least the qualification of level 2 (in case of requirement ABC level 1) or level 3 (in case of requirement ABC level 2).

In this case, the validity period shall be limited to this transition period until the ABC is qualified conform the standard.

Temporary Employment

(last change: Revision 3)

The temporary staff which is carrying out adhesive bonding work, is subject to the same qualification requirements as the permanent staff.

Qualification of ABC (Adhesive Bonding Coordinators)

(last change: Revision 5)

For the qualification of the ABC these personnel need diplomas according to DVS 3311.

Recognition of the DVS Adhesive Bonding Technologist as ABC Level 1

(last change: Revision 7)

A DVS bonding technologist according to DVS 3304 is considered as a comparable qualification for an ABC level 1, but without the competence in the process step of design for bonded components of class A1.

6. Requirements for adhesive bonding processes

Testing and Evaluation of test samples S1 and S2

(last change: Revision 3)

The evaluation of work samples (e. g. specimens for process control) or their test results has to be carried out by personnel with adhesive bonding specific qualification. The personnel for the testing of these work samples must be determined and instructed by the ABC. The evaluation must be carried out by an European Adhesive Specialist (EAS, for S2) or by an European Adhesive Engineer (EAE, for S1).

Monitoring of suppliers

(last change: Revision 8)

For the surveillance of suppliers or supply chains of adhesive bonded components of classes S1 and S2, a regular second party audit (supplier audit) is permissible as an alternative to a third party audit (by a Certification Body).

For the monitoring of suppliers or supply chains of bonded components of classes S3, regular first party audits are also permissible as an alternative to the two types of audits mentioned. In this case, the supplier declares by means of a legally binding written self-declaration the determined compliance with DIN 2304-1.

7. Requirements for technical Equipment and Infrastructure

Labs

(last change: Revision 3)

Users or laboratories carrying out validation tests, validating design and process capability or performing continuous process control tests must provide an appropriate certificate of competence.

If no official certificate of competence is available (e.g. accreditation according to DIN EN ISO IEC 17025 or own certification according to DIN 2304), the user-company must check

the following criteria when commissioning a test laboratory (internal or external) to test bonded joints of classes S1 and S2:

- Personnel (organisation, responsibilities of those undertaking the testing work, qualification of personnel operating testing equipment, qualification of adhesive bonding personnel (e.g. for in-house sample preparation),
- Testing equipment (monitoring, suitability),
- Procedures (processing procedures, tests according to own and external guidelines, reporting, traceability of data)
- Workplace/laboratory conditions (cleanliness, ambient conditions, access restrictions)
- Management of samples and products that are provided.

These requirements also apply in the case that the manufacturing plant performs the tests internally for verification, validation of design and process capability, or continuous process control.

8. Certification process

Audit Adjourment

(last change: Revision 3)

In principle, it is not possible to extend the validity of a certificate. In exceptional cases, if timely agreement of an audit date is not possible, a certificate can be extended for a maximum of 3 months without an audit. The new expiry date of the certificate must be entered in the Onlineregister.

Monitoring

(last change: Revision 3)

Within the period of validity of the certificate, the certification body monitors the user company. Within the period of validity of the certificate one surveillance audit has to be carried out by the certification body. Additional monitoring shall be carried out in justified cases.

Bonding example while the audit

(Revision 3)

For initial certification and recertification, an exemplary bonding example of the highest class applied must be shown by the company during auditing.

The bonding example must be typical of the bonding activities normally made in production. If there are several typical adhesive bonds (e. g. elastic 1-component thick-film, adhesive bonds with high-modulus 2-component systems), the certification body or the auditor must be consulted in good time before the start of the audit to determine which bonding examples will be audited.

In any case, complete process documentation must be available for each bonding system.

If there is no corresponding bond of the highest class in regular production at the time of the audit, an example shall be prepared which is oriented in type and scope of documentation to a typical bond of the highest class to be achieved. This shall be agreed with the certification body or the auditor in good time before the start of the audit.

Escalation in case of missed deadline for the correction of nonconformities

(Revision 8)

In the case of new approvals and recertifications, certificates can be issued for a limited period of time in order to give companies the opportunity to obtain a certificate despite non-critical deviations. These non-critical nonconformities must then be implemented by the defined date; the certificate can then be extended in time to the full term if the check by the Certification Body is positive.

In the case of a surveillance audit, the non-critical nonconformities must also be implemented by the companies. If the defined time for correcting these nonconformities is exceeded, the Certification Body is entitled to suspend the certificate or to shorten the duration of the certificate's validity.