



AMK Technical Bulletin 003

Furniture – Requirements of the resistance to withdrawal of screws from particleboards and MDF

Edition 09/2022

For AMK members
(manufacturers of kitchen furniture, appliances, sinks and accessories, as well as dealers),
surveyors and test institutes

Preface

AMK Technical Bulletins represent information provided by the AMK Working Group Technology & Standardisation. This information contains tried-and-tested recommendations and requirements according to the state of the art as well as relevant standards and legislation. As long as requirements are defined, these are subject to the reservation that equivalent technical solutions are also possible and can be agreed.

AMK Technical Bulletins are prepared by representatives from industry, test institutes, by the science and research communities, as well as by publicly appointed and sworn surveyors.

AMK Technical Bulletins are available to all AMK members, test institutes and surveyors free of charge to apply on a voluntary basis.

The AMK Technical Bulletin 003, edition 09/2022, was elaborated by the AMK Working Group Technology & Standardisation.

The AMK Technical Bulletin 003 was developed to give wood-based material manufacturers/suppliers and furniture manufacturers requirements of the resistance to the withdrawal of screws from particleboards and MDF as guidance, as these are not normatively defined.

This AMK Technical Bulletin replaces the AMK Technical Bulletin 003, edition 01/2013.

Amendments

The following amendments, among others, have been made in comparison to AMK Technical Bulletin 003, edition 01/2013:

- a) MDF adopted in the area of application;
- b) AMK screw replaced by the screw according to DIN EN 320:2011;
- c) requirement values redefined due to change of test screw;
- d) layout changed;
- e) revision remark removed.

Version history

The following former editions of the AMK Technical Bulletin 003 exist:

- Edition 01/2013
- Edition 08/2008
- Edition 05/2004
- Edition 08/2001

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1. Area of application

This AMK Technical Bulletin specifies requirements for the resistance to axial withdrawal of screws according to DIN EN 320:2011 for coated and uncoated MDF and particleboards.

Checking the resistance to axial withdrawal of screws is used to verify the board quality.

The determined values are not used to calculate the holding capacity of connections and fastenings.

This AMK Technical Bulletin only applies to boards in a new and delivery condition.

This AMK Technical Bulletin applies to agreements between the wood-based material manufacturer/ supplier and furniture manufacturer.

2. Standards and literature references

DIN 7982:1990, Cross-recessed countersunk head tapping screws (*withdrawn*)

DIN EN 312:2010, Particleboards – Specifications

DIN EN 320:2011, Particleboards and fibreboards – Determination of resistance to axial withdrawal of screws

DIN EN 326-1, Wood-based panels – Sampling, cutting and inspection – Part 1: Sampling and cutting of test pieces and expression of test results

DIN EN 622-5:2010, Fibreboards – Specifications – Part 5: Requirements for dry process boards (MDF)

DIN EN ISO 7050, Cross-recessed countersunk (flat) head tapping screws

DIN EN ISO 7051, Cross-recessed raised countersunk (oval) head tapping screws

ISO 1478, Tapping screw thread

3. Requirements

3.1 Wood-based materials manufacturer

The test is done on uncoated particleboards and MDF.

Samples are to be taken and the test pieces are to be cut according to DIN EN 326-1.

The requirements according to Table 1 are to be met. The requirements according to Table 1 must be met by 5 % quantile (fractile) values, which are calculated from mean values of individual boards according to DIN EN 326-1 in relation to the mean value.

Table 1 – Requirements of coated and uncoated boards

Attribute	Particleboard	MDF
	DIN EN 312:2010, Type P2	DIN EN 622-5:2010, Type MDF
Nominal thickness range of the board [mm]	> 13 to 20	> 12 to 19
Surface resistance to withdrawal [N]	≥ 870	≥ 1 000
Narrow surface resistance to withdrawal [N]	≥ 620	≥ 670

3.2 Furniture manufacturer (incoming goods inspection)

The test is done on coated particleboards and MDF.

10 test specimens are to be taken from every board/component selected. The test specimens are to be taken spaced as randomly as possible across the entire area of the board/component.

The resistances to withdrawal of screws for the surface area and narrow surface are determined separately for each test specimen at 10 N.

The evaluation of the furniture manufacturer is also based on a 5 % quantile examination of the results, but is carried out with a simplified evaluation method with a lower limit value due to the low number of samples.

The requirements according to Table 1 are to be met by each individual value. If one of the 10 measured values is below the minimum value according to Table 1, compliance with the minimum values according to Table 1 can be proven with a second series of measurements with 10 test specimens, as long as none of the individual values falls below the minimum requirement.

4. Test method

The test is to be carried out in accordance with DIN EN 320:2011.

Differing from this, on each test specimen 1 withdrawal test is to be performed on the surface area and 1 withdrawal test on a narrow surface. A new screw is to be used for each withdrawal test.

A galvanized screw according to DIN EN ISO 7050 (C-Z or H) or according to DIN EN ISO 7051 (C-Z or H) with the nominal dimensions 4.2 mm x 38 mm and a thread according to ISO 1478 – ST 4.2 is to be used. This screw equates to the screw described in DIN EN 320:2011, 5.4.

NOTE *DIN EN ISO 7050 and DIN EN ISO 7051 describe a requirement of the thread according to ISO 1478.*

NOTE *DIN EN ISO 7050 is the successor to the withdrawn DIN 7982:1990.*

5. Test report

If possible, the test report is to be compiled according to DIN EN 326-1.