

Concerning the interpretation of DIN EN 204/205 and the evaluation of specimens

Information Leaflet by Technical Committee on Wood Adhesives (TKH)

In the past, there were cases in which individual experts tried to evaluate damages in the event of a claim by testing specimens cut out from the claimed parts which were manufactured in the field. Based on the results of the tests carried out on those specimens, they then tried to assess the quality of the adhesive used for bonding.

The classification of an adhesive into durability classes D1 to D4 cannot be determined by carrying out tests following DIN EN 204¹ on parts which were manufactured in the field. It is a mandatory requirement of DIN EN 204 that the specimens be assembled and testing is carried out as described in DIN EN 205².

Thermoplastic wood adhesives for non-structural components are generally classified according to the specifications in the DIN EN 204 and DIN EN 205 standards. This facilitates a classification of thermoplastic wood adhesives into different durability classes (D1 – D4). The values specified for that classification cannot be transferred to measurements on parts which were manufactured in the field, because the standard describes a procedure of how adhesives are to be assessed in the lab.

The standard specimen is described as follows:

Prescribed wood species:	beech (<i>Fagus sylvatica</i> L.)
Pretreatment:	unsteamed, planed and sanded
Wood moisture:	at the time of bonding 12 ± 1 %
Bondline thickness:	0.1 mm
Thickness of the panels to be bonded:	5.0 ± 0.1 mm
Specimen wood:	straight grained, angle between the growth rings and the surface to be bonded between 90° and 30°

¹ DIN EN 204 - Classification of thermoplastic wood adhesives for non-structural applications

² DIN EN 205 - Wood adhesives for non-structural applications - Determination of tensile shear strength of lap joints

Parts which were manufactured in the field may deviate in all relevant points from the standardised specimen.

Added together, the deviations inevitably lead to significant differences between the standardised specimen and the part manufactured in the field. It is therefore not possible to compare the results of a test carried out with lab specimens according to DIN EN 205 to the values of a part manufactured in the field. In addition, the quality of the strength values before and after exposure to stress cannot be compared to the strength values set in the

DIN EN 204 standard. A specimen with a different geometry, for instance, may already develop tensions during the conditioning sequence which are higher than in standardised specimens. In addition, thicker solid wood parts may already lead to extreme tensions during the joining process which may damage the glue line.

The standards DIN EN 204/205 are not intended as testing instructions for parts manufactured in the field. The purpose of these lab testing procedures is to facilitate a classification of adhesives into different durability classes based on defined conditions. The individual durability classes are then recommended for different applications, for instance:

- D3: for interior applications with frequent short-term exposure to running or condensed water and/or to heavy exposure to high humidity. Exterior not exposed to weather.
- D4: for interior applications with frequent long-term exposure to running or condensed water. Exterior exposed to weather but with protection by an adequate surface coating.

Taking into account the above-mentioned information, the testing of specimens from manufactured goods based on the parameters described in DIN EN 204 and 205 with the purpose of subsequently assessing the durability class of a wood adhesive is wrong and falls out of the scope of the standard. It is however admissible to test a reference sample of the used adhesive according to DIN EN 204, whereas it is recommended that the very difficult testing procedure be carried out by one of the renowned testing institutes which are specialised in those tests.