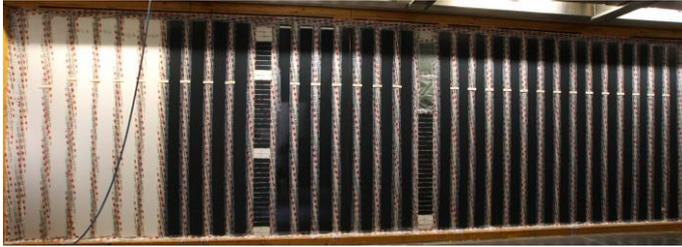
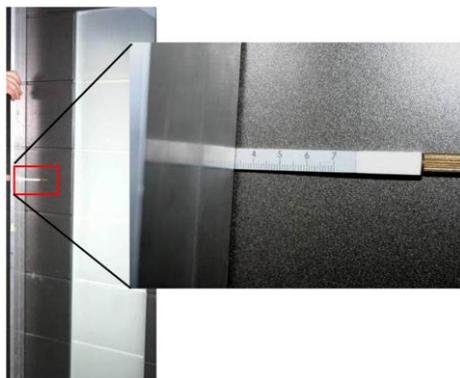


Development of a simplified method for testing the suitability of MDF for the usage in exterior doors



Different types of frame wood specimens in the double climatic chamber of the WKI. To reduce deformations of modern exterior doors, different materials are combined in partially complicated layer compositions. For the development of modern exterior door systems, presently complete door constructions must be produced and tested in work intensive and time-consuming trials. Within the scope of an R&D project investigations have been carried out to evaluate the deformation characteristics of door systems with face layers from MDF. Prediction models by means of accelerating testing trials should be derived. For this purpose various material combinations were tested in complete doors and on smaller lab-scale specimens. Results from typical damage analyses have been integrated in the project. The comparable tests of different sample sizes showed that instead of complete doors much smaller door samples in the size of 2250 mm x 180 mm can reveal similar results. Furthermore, the tests have shown that the deformation behavior of doors is not predictable with further reduction of the specimen size to 1250 mm x 70 mm. The diffusion resistance of the coating has been identified as key element on the resulting deformation of exterior doors. A high diffusion resistance of the coating can severely reduce the deflection of doors. The tests on small samples of the doors showed, that a comparative measurement of the mass loss of samples after 6 hours in a drying oven at 80 °C allows a fair ranking for the most suitable coating system. Thus, for the producers of exterior doors an easy and quick method for choosing a coating system is now available.



Typical measurement of the deflection of a door leaf using a straight edge and a V-head. The door shows a deformation of 3,3 mm.

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