

Research Project

“Update of the parts catalogue of German standard DIN 4109, section skeleton constructions”

- Summary -

Aim of the research project

The German building acoustics standard DIN 4109 is currently undergoing a fundamental revision within the scope of European harmonization. Amongst other things, this standard includes a “catalogue of components”, which lists sound insulation figures for common building techniques and components. These are allowed to be used for the proof of noise abatement without individual testing. Regarding lightweight frame constructions (metal framework walls lined with plasterboard), the figures in the current standard have to be reviewed and changed if necessary due to technical developments of the plasterboards, a fact which has been considered only partially in past updates. Also, to a wide extent the origin of the figures listed in the recent version of DIN 4109 is unclear, which has to be regarded a problematic. Accordingly, a working group in the responsible standardization committee proposed a research project in order to randomly check the noise reduction measures of tables 31 and 32 (longitudinal transmission loss of metal frame walls and heavy walls with linings). In this context, it was also taken decided to check the usability of test certificates supplied by the gypsum industry and focussing on plasterboard framework walls with respect to an update of the parts catalogue. Finally, comparative prediction calculations were performed. The research project was coordinated by PTB, the measurements were performed by IBP Stuttgart.

Results of the research project

- Regarding the longitudinal transmission loss of metal framework walls with a continuous inner lining – even with a separating cut in the connecting area -, the old table values were confirmed to a wide extent. In the case of an interrupted inner lining, however, discrepancies were observed which could not be completely explained in the scope of this research project. Here, further investigations may be necessary.
- Based on these results, a standardization proposal was prepared which does not specifically mention the interrupted type any more, but still allows its application.
- Regarding the longitudinal transmission loss of heavy walls with a detached and completely interrupted lining, the prediction calculation according to the current draft of DIN 4109.x delivers a reasonable and safe estimation. Accordingly, the application of this prediction method is recommended for these types of construction.
- For continuous linings which are either detached or attached to the basic wall using compound materials, a standardization proposal was prepared, partially based on the recent table values. For extra safety, a separating cut is required for all listed types.
- The prepared standardization proposals were forwarded to the standardization committee responsible.