

THE ICELANDIC SOUND CLASSIFICATION STANDARD FOR DWELLINGS – EXPERIENCE AND DEVELOPMENT

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1. INTRODUCTION

In July 2003 the Icelandic standard IST 45:2003 “Sound classification of dwellings” was approved. The standard is identical to the Nordic standard proposal INSTA 122:1998, which was prepared by a Nordic working group in 1998. The acoustical demands in the Icelandic building code have not changed since 1979, but in 1998 the so called. “recommended values” were introduced. These values are identical to the C - class demands in the classification standard.

2. USING THE STANDARD

Already before 2003 the Nordic standard proposal INSTA 122:1998 was introduced to the Icelandic building industry. Many building firms started to design their houses according to class C and the recommended values in the building code. Others continued as before - just to meet the minimum demands in the building code. A few made attempts to reach class B.

The attempts to reach class B were in all cases done by introducing heavy floating floors and also somewhat thicker concrete walls between apartments.

As this was a new building technique in Iceland there were some initial problems, but now the method has been established as more or less a standard method in buildings with a “higher standard”.

Several different types of floating floors have been used, and many measurements of the sound insulation in these houses have been made.

The most common method is to use about 30 mm soft cellular plastic and about 50 mm anhydrite floating floor.

The results show that in almost all cases the airborne sound insulation demands are fulfilled, but only in some cases are the demands for the impact sound level fulfilled. A very common result is a very low (good) value for $L'_{n,w}$ but when $L'_{n,w} + C_{i,50-2500}$ is introduced the results are 1-3 dB too high.

Another common method is to use a thin elastic material (8-10 mm) as an underlayer for a 50 mm anhydrite floating floor, but here the aim is to reach class C. In most cases the airborne sound insulation demands are fulfilled, but only in some cases are the demands for the impact sound level fulfilled.

The building method to use light floating floors, which is common in Sweden, Norway and Denmark has not been much used in Iceland. The introduction of heavy floating floors has also encouraged the use of floor heating systems with hot water in plastic pipes in the floating floors. This is very common now in new houses.

The demand on airborne sound insulation from a common corridor into the apartments has been very much debated by architects in Iceland. This demand is both in the building code and also in the standard. The demand is the same as between apartments, and this calls for a closed entrance space in each apartment. This demand is not identical in all the Nordic countries.

3. CONCLUSIONS

The introduction of the Icelandic sound classification standard has resulted in a change in building methods for dwellings. However the results are often not good enough to reach the intended sound class. The explanation is probably too thin floating floors, and underlayers that are not soft enough.