

Introduction

On 12 March 1978, ASTM Subcommittee E06.41 on Infiltration Performances sponsored a symposium in Washington, D.C., on Air Change Rate and Infiltration Measurements. At that symposium, the first two standard test methods for determining air infiltration in buildings developed by the subcommittee were presented together with papers dealing with related topics such as field studies, indoor air pollution, air infiltration reduction, energy implications, and innovative measurement methods then not yet considered for standardization. The results of that symposium were published in Building Air Change Rate and Infiltration Measurements, ASTM STP 719.

In discussions of the 1978 symposium, the question about required, or desirable, air infiltration rates was raised. However, as stated in the final discussion at that symposium, "The question of how tight is tight enough has not been answered, nor was it the purpose of this symposium to provide this answer." In 1984, that answer was still not available.

However, designers, builders, regulators, owners, and those involved with the design and application of equipment to heat and cool buildings do need such answers. Innumerable telephone calls as well as written requests were received from persons who all essentially said, "Now that we know how to measure air infiltration and air change rates in buildings, how do we know what results we should expect or demand? In other words, what are acceptable performance levels?"

While we still do not have final answers, many studies have been completed that do indicate what infiltration rates were measured in actual buildings. These rates, together with calculated rates, do give at least some guidance to those needing to know the levels of infiltration performance that can be expected and that are achievable. Thus, it was felt it would be useful to bring together practitioners and researchers; the 1984 symposium on Measured Air Leakage Performance of Buildings was organized for this reason.

The symposium not only uncovered a wealth of data on measured infiltration rates in various building types and climates but also provided an opportunity to discuss related issues of mathematical modeling and prediction of air infiltration rates, methods for infiltration reduction and their effectiveness, and new proposed methods of measuring infiltration. It is hoped that this publication, which contains most of the papers presented, will be useful

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to both researchers and those engaged in designing and regulating the design of buildings and their equipment by providing data on measured air changes and infiltration rates achieved in existing buildings and by documenting some of the more widely used models and infiltration reduction methods.

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