

Technical Note No. 3

Wind loading on wall cladding and windows of low-rise buildings



This technical note is one in a series of five on wind loading for the window and cladding industry. The series comprises:

- TN 2 Introduction to wind loading on cladding*
- TN 3 Wind loading on wall cladding and windows of low-rise buildings*
- TN 4 Issues relating to wind loading on tall buildings*
- TN 5 Wind tunnel testing*
- TN 6 Pressure equalisation

Introduction

This technical note provides a simplified method of calculation for wind loading, based on BS 6399: Part 2, for buildings in open country and not exceeding two storeys in height, and buildings in town not more than three storeys in height, assuming shelter from surrounding buildings. The calculated wind pressures are appropriate for windows in walls and cladding panels having a diagonal dimension of 5m or less. This approach may also be used for larger panels, but lower values and a more economic design may result from a full calculation based on BS 6399: Part 2.

The action of the wind on a building exerts a force in the form of a dynamic pressure which varies on each face, and across each face, of the building. In the case of wind blowing directly onto the face of a building a positive pressure is exerted on the windward face and a corresponding negative pressure (suction) is generated along the sides and across the leeward face.

Calculation Procedure

The calculation procedure set out in this technical note will lead the designer through a

series of steps to obtain a design wind pressure on cladding panels or windows. It is important at the preliminary stage of design that the location and orientation of the building are considered and, where possible, information gathered on local wind loading pressures calculated on similar buildings in the vicinity. In the case of windows, performances are classified into pressures of 1200Pa, 1600Pa and 2000Pa as specified in BS 6375: Part 1. In cases where the calculated pressures are close to but greater than the upper rating of a window it may be more economic to conduct a full calculation based on BS 6399: Part 2, which may give a lower wind pressure because of the simplifying assumptions that have been made, whilst ensuring that the wind load is not under-predicted.

Stage 1 (basic dynamic pressure)

The geographical variation of the basic dynamic pressure (q_b) can be read from Figure 1. This shows the variation in dynamic pressure throughout the UK assuming a basic wind speed at 10m above mean sea level. The dynamic pressure values do not take account of topography or altitude which are considered separately.