

Structural performance of systemised walls – Closed profiles

This Technical Note is one of a series describing the design and assessment of wall framing systems and brackets. The series comprises:

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This Technical Note describes the design check required for a hollow closed framing profile in accordance with BS EN 1999-1-1.

Introduction

Aluminium curtain walling systems generally comprise mullions and transoms extruded as hollow thin walled profiles. These are used to give a satisfactory appearance to the exposed framing members. They also have the structural advantage that they have a high torsional stiffness compared with their bending stiffness.

This Technical note covers the structural performance of closed profiles used as mullions, transoms and similar framing members in curtain walling and roofing systems.

BS 8118 has been superseded by BS EN 1999-1-1 (Eurocode 9) which is taken as the basis for this Technical Note.

Notation and conventions used in this Technical Note are shown in Appendix A.

Open and closed sections

Hollow box sections are far less likely to be affected by torsion and overall buckling than are open sections such as channels. It is important to understand that the hollow closed section has to be a single extrusion (monolithic) and not a box comprising a channel and a plate.



Figure 1 Hollow closed section mullion



Figure 2 Open section with plate

Open section profiles perform less well as they have:

- Much lower torsional stiffness than a hollow closed section of the same overall dimensions.
- Significant outstands that may give rise to local buckling.

Additionally, sections with a separate side wall will have:

- Much lower flexural stiffness about their minor axis.