

NEMA OS 4

Requirements for Air-Sealed Boxes for Electrical and Communication Applications

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Foreword

Building and energy codes for energy-efficient construction place a high priority on preserving the building thermal envelope. Installation of doors; windows; and mechanical, electrical, and other systems within exterior walls and ceilings and other separations between conditioned and unconditioned spaces results in penetrations in the air barrier. When these penetrations are not effectively sealed, the air barrier is compromised, resulting in air leakage, both in and out, which increases the energy usage necessary to maintain the desired condition of the air inside the structure.

Besides external walls and ceilings in a building, uninsulated interior walls and interior floor-ceiling cavities not designed specifically for air exchange, present pathways for air leakage. Even though air barriers are not commonly installed here, consideration should be given to using effective sealing techniques at wall, ceiling, and floor penetrations in these areas.

Sealing air-barrier penetrations is not always as simple as applying more insulation, caulk, or expanding foam. Products such as electrical outlet boxes, having design features that address effective sealing of the air-barrier penetrations, also reduce potentially undesirable effects that can result from the use of unspecified sealing techniques.

Annex B of this standard provides pertinent references to the applicable building and energy codes and to other helpful references.

In the preparation of this standards publication, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted by contacting:

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Section 1 General

1.1 Scope

This standard establishes a performance test and classification scheme for outlet boxes: wall boxes, ceiling boxes, and floor boxes used for electrical and communication applications having design provisions for reducing the flow of air (air leakage) through the box and at its installed interface with the building structure, when installed as intended for normal use as instructed by the manufacturer.

The classification scheme in this standard meets the intent of the International Energy Conservation Code (IECC) and covers boxes installed in walls, ceilings, and floors where an air barrier is required.

This standard does not cover design or performance of electrical outlet boxes that are addressed in ANSI/UL 514A, CSA C22.2 No.18.1, NMX-J-023-ANCE, ANSI/UL 514C, CSA C22.2 No.18.2, ANSI/NEMA OS1, ANSI/NEMA OS2, IEC 60670-1, IEC 60670-21, or IEC 60670-23.

This standard does not cover environmental classifications for boxes or enclosures addressed in ANSI/UL 50E, CSA C22.2 No. 94.2, or NMX-J-235/2-ANCE.