



# ICBO Evaluation Service, Inc.

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## EVALUATION REPORT

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ER-5644

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Filing Category: ELECTRICAL OUTLET BOXES AND CONDUITS (050)

### NONMETALLIC ELECTRICAL OUTLET BOXES IN FIRE-RESISTIVE WALL AND FLOOR-CEILING ASSEMBLIES

CARLON, A LAMSON & SESSIONS CO.  
25701 SCIENCE PARK DRIVE  
CLEVELAND, OHIO 44122

#### 1.0 SUBJECT

Nonmetallic Electrical Outlet Boxes in Fire-resistive Wall and Floor-ceiling Assemblies.

#### 2.0 DESCRIPTION

##### 2.1 General:

The electrical outlet boxes are used in fire-resistive assemblies as described in this report. The boxes are constructed from  $3/32$ -inch-thick (2.4 mm) PVC or modified phenylene oxide plastic material.

##### 2.2 Use in Wall Assemblies:

The electrical outlet boxes consist of single-, two- and three-gang sizes with a maximum surface area of 21.2 square inches (13 677 mm<sup>2</sup>). They are used with listed cover plates in bearing or nonbearing wood stud walls or nonbearing steel stud walls having fire-resistive ratings of up to two hours.

##### 2.3 Use in Floor-ceiling Assemblies:

The electrical outlet boxes are circular in shape, with a maximum diameter of 4 inches (102 mm) and a maximum surface area of 13 square inches (8378 mm<sup>2</sup>). The boxes are designed to be used with listed steel cover plates in combustible floor-ceiling assemblies having fire-resistive ratings of up to two hours. The assemblies consist of gypsum wallboard attached directly to solid-wood ceiling joists. When used, resilient channels are installed between layers of gypsum wallboard.

##### 2.4 Installation:

Clearances between cutouts and outlet boxes must not exceed  $1/8$  inch (3.2 mm). Any gaps between the box edges and the wall or ceiling openings must be closed with wall taping compound or plaster spackling compound. The boxes must be attached to the studs or joists using two nails, hangers or brackets. Electrical outlet boxes installed on opposite sides of staggered wood stud walls must be separated by fire-stopping materials as specified in the code.

##### 2.5 Identification:

The electrical outlet boxes are identified by a permanent embossment, on the inside bottom, bearing the Carlon name, the catalog number, the Underwriters Laboratories Inc. logo, and the evaluation report number (either ICBO ES ER-5644, or NER-140).

#### 3.0 EVIDENCE SUBMITTED

Reports of fire tests conducted in accordance with UBC Standard 7-1, and descriptive literature.

#### 4.0 FINDINGS

That the Carlon nonmetallic electrical outlet boxes described in this report comply with the 1997 *Uniform Building Code*<sup>™</sup>, the 2000 *International Building Code*<sup>®</sup> and 2000 *International Residential Code*<sup>™</sup>, subject to the following conditions:

- 4.1 Boxes are installed in accordance with this report.
- 4.2 No more than two wall boxes are located in each stud space on the same side of fire-resistive walls.
- 4.3 The electrical outlet boxes are permitted to be installed on opposite sides of wall assemblies having a fire-resistive rating of two hours or less, as described in Sections 4.3.1 through 4.3.3.
  - 4.3.1 Boxes installed on opposite sides of load-bearing and nonload-bearing wood-stud and nonload-bearing steel-stud fire-resistive assemblies, without the use of mineral wool batt insulation, are separated by a horizontal distance of at least 24 inches (610 mm).
  - 4.3.2 Boxes installed on opposite sides of a nonload-bearing fire-resistive wall assembly that contains  $3\frac{1}{2}$ -inch-thick (89 mm) mineral wool batt insulation having a density of 2.5 pcf (40 kg/m<sup>3</sup>) between the boxes are permitted when the horizontal separation distance is at least 7 inches (178 mm) and the insulation is continuous for the entire length of the fire-resistive assembly.
  - 4.3.3 Nonmetallic boxes installed with nonmetallic tubing (ENT) on opposite sides of a load-bearing fire-resistive wall assembly containing minimum-4-inch-thick (102 mm) mineral wool batt insulation having a minimum density of 2.5 pcf (40 kg/m<sup>3</sup>) between the boxes are permitted when the horizontal separation distance is 24 inches (610 mm) and the insulation is continuous for the entire length of the fire-resistive assembly.
- 4.4 Listed steel cover plates, complying with Section 370-21 of the *National Electrical Code*, are used with ceiling boxes. Listed plastic cover plates complying with UL Standard No. 514C, or listed steel cover plates complying with Section 370-21 of the *National Electrical Code*, are used with wall boxes.

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- 4.5 The surface area of the wall and ceiling outlet boxes is limited to a maximum of 21.2 and 13 square inches (13 677 and 8378 mm<sup>2</sup>), respectively.
- 4.6 Ceiling boxes are separated from each other by a minimum of 4.5 feet (1372 mm).
- 4.7 The aggregate surface area of the outlet boxes in walls or ceilings on one face of the fire-resistive assembly must not exceed 100 square inches (64 516 mm<sup>2</sup>) for any 100 square feet (9.29 mm<sup>2</sup>) of wall area or 31 square inches (20 000 mm<sup>2</sup>) for any 100 square feet (9.29 mm<sup>2</sup>) of ceiling area.

This evaluation report is subject to re-examination in two years.