



## Requirements for Warm-Air Heating, Ventilating and Air Conditioning Systems

*This pamphlet is one in a series that describes residential energy conservation requirements of the Oregon Residential Specialty Code and the Structural Specialty Code for Group R buildings three stories and less in height. Other pamphlets in this series may be obtained from Oregon Dept of Energy at [www.oregon.gov/energy/](http://www.oregon.gov/energy/) or local building departments or from Oregon Building Codes Division.*

### Duct insulation requirements

All heating and central ventilation system ducts outside conditioned spaces must be insulated to R-8. Duct boots and the furnace plenum also must be insulated. R-8 duct insulation may be achieved by using an R-8 duct insulation product, doubling R-4 insulation, or using an R-8 manufactured flex duct. Insulated ducts should be installed in a way that minimizes insulation compression.

The new energy code raised duct insulation requirements because studies show significant heat loss through duct systems. Without insulation and air sealing, ducts may lose as much as 20 to 40 percent of heat produced by the furnace.

### Residential Code (ORSC) and Mechanical Specialty Code (OMSC) requirements that affect duct systems

Residential Code Chapter 16 and Mechanical Code Chapter 6 include requirements that affect duct systems. Requirements address fire ratings, labeling, sealing of joints and seams, materials standards, vibration mitigation, support, and fastening.

If duct insulation is faced, facing material must have a flame spread rating of not more than 25 and a smoke developed rating of not more than 50. Insulation fire rating and R-value must be stamped on the insulation face.

Air sealing of ducts also is required. All joints and seams of the duct system must use the appropriate UL-181 rated tape or sealed with UL-181 rated mastics.

### Combustion air requirements

Energy code cross-references incorporate adequate exterior combustion air requirements from Residential Code R-1005 and Structural Code 2111.14 for masonry and factory-built fireplaces, and factory-built stoves.

### System controls

Each HVAC system must have a thermostat to control temperature. In zoned buildings, each zone must have its own thermostat.

At a minimum, thermostats must be numerically marked and capable of being set between 55 and 75 °F for heating-only thermostats; between 70 and 85 °F for cooling-only thermostats; and between 55 and 85 °F for thermostats that control both heating and cooling.

The system control must have a switch or other means of setting back or shutting off heating and cooling during periods of reduced need.

All control features called for in code are widely available.

Information presented in this publication supports the Oregon Residential Specialty Code, or Chapter 13 of the Oregon Structural Specialty Code. This publication does not include all code requirements. Refer to the code and check with your code official for additional requirements. If information in this publication conflicts with code or your local officials, follow requirements of code and your local officials.

For more information about the residential energy code, call the Building Codes Division at (503)378-4133 or the Oregon Dept of Energy (503)378-4040 in Salem or toll-free, 1-800-221-8035.

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