8.17 Duct Insulation

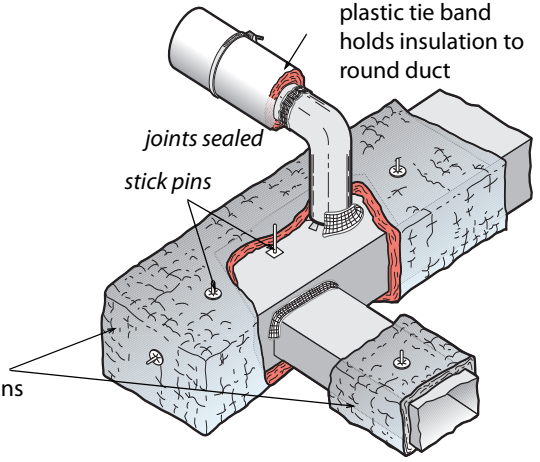
SWS Detail: 5.0107 Duct Insulation; 5.0107.1 General Duct Insulation; 5.0107.2 Duct Insulation - Spray Polyurethane Foam (SPF)

Insulate supply ducts, located in unconditioned areas outside the thermal boundary, such as crawl spaces, attics, and attached garages. Use vinyl- or foil-faced duct insulation or SPF. Don't insulate ducts that run through conditioned areas unless they cause overheating in winter or condensation in summer. Use these best practices for installing insulation.

- ✓ Always perform necessary duct sealing before insulating ducts.

- ✓ Duct-insulation R-value must be ≥R-8 indoors and ≥R-12 outdoors.
- ✓ Select insulation with a flame spread and smoke developed index listed at 25/50.
- ✓ Insulation should cover all exposed supply ducts, with no significant areas of bare duct left uninsulated.

Duct insulation: Insulate supply ducts, located in unheated areas, to a minimum of R-8.



- ✓ Insulation's compressed thickness must be more than 75% of its uncompressed thickness. Don't compress duct insulation excessively at corner bends.
- ✓ Fasten insulation using mechanical means such as stick pins, twine, staples, or plastic tie bands.
- ✓ Cover the insulation's joints with UL 181 tape to seal all gaps.
- ✓ Install the duct insulation 3 inches away from heat-producing devices such as recessed light fixtures.
- ✓ Post a dated receipt, signed by the installer, that includes: Installed insulation type, coverage area, installed thickness, and installed R-value.

Caution: Burying ducts in attic insulation is common in some regions and it reduces energy losses from ducts. However, condensation on ducts in humid climates is common during the air-

conditioning season, so don't allow cellulose to touch metal ducts to avoid corrosion from cellulose's Borate fire retardant.

Important Note: Tape can be effective for covering joints in the insulation to prevent air convection, but the tape fails when expected to resist the force of the insulation's compression or weight. Outward-clinch staples or plastic tie bands can help hold the insulation facing and tape together.

8.17.1 Spray Foam (SPF) Duct Insulation

SWS Details: 5.0107.2 Duct Insulation - Spray Polyurethane Foam (SPF)

High-density spray foam insulation is also a good duct-insulation option, assuming it is listed as ASTM E-84 or UL 723. Spray foam is effective in areas where the foam can seal seams and insulate in one application. However, the spray foam application is limited by the available space around the duct compared to wrapping ducts with fiberglass blankets because the installer needs room to spray.

- ✓ Select foam insulation with a flame spread and smoke developed index listed at 25/450.
- ✓ Prepare surfaces to satisfy manufacturer's specifications for cleanliness, moisture content, and temperature.
- ✓ Cover all holes, cracks, and gaps where SPF may enter the duct with a backing material, such as foil tape.
- ✓ Separate foam insulation from living spaces with a thermal barrier or ignition barrier as required by local codes.
- ✓ Post a dated receipt, signed by the installer, that includes: Installed insulation type, coverage area, installed thickness, and installed R-value.