

U.S. Department of Energy - Energy Efficiency and Renewable Energy Energy Savers

Types of Insulation

When insulating your home, you can choose from many types of insulation. To choose the best type of insulation, you should first determine the following:

- [Where you want or need to install/add insulation](#)
- [The recommended R-values for areas you want to insulate.](#)

The table below provides an overview of most of the available insulation forms, insulation materials, their installation methods, where they're applicable to install in a home, and their advantages.

CLICK ANYWHERE on THIS PAGE to return to INSULATION R-VALUES & PROPERTIES at InspectApedia.com

That article includes insulation properties for many more materials than you'll find in this DOE document

Table 1. Types of Insulation

Form	Insulation Materials	Where Applicable	Installation Method(s)	Advantages
<u>Blanket: batts and rolls</u>	Fiberglass Mineral (rock or slag) wool Plastic fibers Natural fibers	Unfinished walls , including foundation walls , and floors and ceilings .	Fitted between studs, joists, and beams.	Do-it-yourself. Suited for standard stud and joist spacing, which is relatively free from obstructions.
<u>Concrete block insulation</u>	Foam beads or liquid foam: Polystyrene Polyisocyanurate or polyiso Polyurethane Vermiculite or perlite pellets	Unfinished walls , including foundation walls , for new construction or major renovations.	Involves masonry skills.	Autoclaved aerated concrete and autoclaved cellular concrete masonry units have 10 times the insulating value of conventional concrete.
<u>Foam board or rigid foam</u>	Polystyrene Polyisocyanurate or polyiso Polyurethane	Unfinished walls , including foundation walls ; floors and ceilings ; unvented low-slope roofs.	Interior applications: must be covered with 1/2-inch gypsum board or other building-code approved material for fire safety. Exterior applications: must be covered with weatherproof facing .	High insulating value for relatively little thickness. Can block thermal short circuits when installed continuously over frames or joists.
<u>Insulating concrete forms (ICFs)</u>	Foam boards or foam blocks	Unfinished walls , including foundation walls , for new construction.	Installed as part of the building structure.	Insulation is literally built into the home's walls, creating high thermal resistance.
<u>Loose-fill</u>	Cellulose Fiberglass Mineral (rock or slag) wool	Enclosed existing wall or open new wall cavities ; unfinished attic floors; hard-to-reach places.	Blown into place using special equipment; sometimes poured in.	Good for adding insulation to existing finished areas, irregularly shaped areas, and around obstructions.
<u>Reflective system</u>	Foil-faced kraft paper, plastic film, polyethylene bubbles, or cardboard	Unfinished walls , ceilings, and floors.	Foils, films, or papers: fitted between wood-frame studs, joists, and beams	Do-it-yourself. All suitable for framing at standard spacing. Bubble-form suitable if framing is irregular or if obstructions are present. Most effective at preventing downward heat flow; however, effectiveness depends on spacing.

<u>Rigid fibrous or fiber insulation</u>	<u>Fiberglass</u> <u>Mineral (rock or slag) wool</u>	<u>Ducts</u> in unconditioned spaces and other places requiring insulation that can withstand high temperatures.	HVAC contractors fabricate the insulation into ducts either at their shops or at the job sites.	Can withstand high temperatures.
<u>Sprayed foam and foamed-in-place</u>	<u>Cementitious Phenolic</u> <u>Polyisocyanurate</u> <u>Polyurethane</u>	Enclosed existing wall or open new <u>wall cavities</u> ; unfinished <u>attic</u> floors.	Applied using small spray containers or in larger quantities as a pressure sprayed (foamed-in-place) product.	Good for adding insulation to existing finished areas, irregularly shaped areas, and around obstructions.
<u>Structural insulated panels (SIPs)</u>	<u>Foam board</u> or liquid foam insulation core <u>Straw core insulation</u>	Unfinished <u>walls</u> , <u>ceilings</u> , <u>floors</u> , and roofs for new construction.	Builders connect them together to construct a house.	SIP-built houses provide superior and uniform insulation compared to more traditional construction methods; they also take less time to build.

Learn More

Financing & Incentives

- [Insulation Incentives](#)
North American Insulation Manufacturers Association
- [Find Federal Tax Credits for Energy Efficiency](#)
Energy Savers

Product Information

- [Frequently Asked Questions About Insulation](#)
Insulation Contractors Association of America

Professional Services

- [Contractor Locator](#)
Insulation Contractors Association of America

Related Links

- [Insulation Materials: Environmental Comparisons](#)
BuildingGreen.com

[Energy Savers Home](#) | [EERE Home](#) | [U.S. Department of Energy Webmaster](#) | [Web Site Policies](#) | [Security & Privacy](#) | [USA.gov](#)

Content Last Updated: March 24, 2009