TYPES OF INSULATION

Insulation does its job by creating small pockets of air that slow the transfer of heat through the insulation—in exactly the same way that a blanket works. Types of insulation vary according to use and location. Among the insulation options that work best in Minnesota's cold climate are the following:

Batts or blankets

Material	Fiberglass, rock (mineral) wool.
R-value/inch	3.1 to 4.0
Method of installation	Fitted between studs, joists and beams.
Where applicable	All unfinished walls, floors and ceilings.
Advantages	Do-it-yourself. Suited for standard stud and joist spacing that is relatively free of obstructions.

Loose-fill

Material	Cellulose, fiberglass, rock (mineral) wool.
R-value/inch	2.4 to 4.0
Method of installation	Blown into place (attics) or dense-packed (cellulose, walls).
Where applicable	Enclosed existing wall cavities or open new wall cavities. Unfinished attic floors and hard-to-reach places.
Advantages	Commonly used for retrofits (adding insulation to existing finished areas). Good for irregularly shaped areas and around obstructions. Dense-pack cellulose in walls also provides an air barrier.

Rigid foam

Material	Extruded polystyrene foam (XPS), expanded polystyrene foam (EPS or beadboard), polyurethane foam, and polyisocyanrate foam.
R-value/inch	3.5 to 7.5
Method of installation	Interior applications—must be covered with ½-inch gypsum board or other building-code approved material for fire safety. Exterior applications—must be covered with weatherproof facing.
Where applicable	Basement rim joists, exterior walls under finish materials and vented low-slope roofs.
Advantages	High insulating value for relatively little thickness. Can block thermal leak when installed continuously over frames or joists. Can provide both air barrier and vapor retarder.

Spray foam

Material	Polyurethane, polyicynene.
R-value/inch	3.6 to 7.0
Method of installation	Sprayed onto surfaces or behind a net facing.
Where applicable	Open wall cavities, between roof rafters.
Advantages	High insulating value for relatively little thickness. Provides good air barrier. Some products provide vapor retarder.