Key Performance Features For The Most Common Insulations

The table below provides side-by-side comparisons of the most common popular types of building insulations.

Feature	Sprayed Cellulose	Sprayed Fiberglass	Fiberglass Batts	Cotton Batts	Open-cell low-density polyurethane Sprayed Foam (Soy)	Close-cell spray polyurethane Sprayed Foam	Comments
R-Value per inch	3.6-4.0	2.2-4.0	3.7	3.7	3.6	5.8	The higher the number the better R-value can be achieved with less thickness.
Meets air barrier requirements without extra materials and work	-	-	-	-	X	X	Spray Foam is an effective air barrier however house wraps, joint sealed OSB, plywood, and gypsum drywall are also air barriers. Visit www.airbarrier.org or www.buildingscience.com regarding the importance of walls to breathe.
Easily insulates irregular or hard-to-reach spaces	X	X	-	-	X	X	Difficult for batt materials to achieve. Easy to achieve with sprayed materials; whether cellulose, fiberglass, or foam.
No HFAs, HCFCs, or HFCs used	X	X	X	X	X	-	Close-cell polyurethane contains HFC-245fa blowing agent which can have an impact on global warming.
Contains no formaldehyde	X	-	-	X	X	X	Members of the Fiberglass industry have introduced a Formaldehyde Free product in recent years although not all fiberglass products are.
No harmful emissions after installation or drying	X	X	X	X	-	-	Although no harmful emissions are present after installation or drying. Both foam products are quite toxic during installation and require respirators or supplied air. Several days are required for airing out the property before occupancy.
Can be injected in closed cavities	X	X	-	-	X	X	Cellulose insulation was the original material used for this application and remains the preferred material by Federal Weatherization programs. Some foam products require bracing every 3 feet for piping and wiring to resist movement by expanding foam.
Mold resistant	X	X	X	X	X	X	Chemical additives in cellulose and other products allows them to pass the ASTM C739 Fungi Resistance test.
Settles over time	X	-	-	-	-	-	Celluose insulation does settle over time and if it is not installed correctly, with the correct depth to account for this then there will be a potential loss in R-value. Packaging identifies correct depth, after settling, to achieve desired R-value.
“Wicks Water”	X	X	X	X	-	-	You shouldn’t get water in the wall but if you do, you want it to spread by wicking to speed drying rather than pooling in one spot. Cellulose insulation passes ASTM C739 Moisture Vapor Absorption test
Not Damaged by Water	-	-	-	-	X	X	All insulation materials lose R-value when exposed to water as the water fills trapped air spaces even if it does not directly affect the insulation material. Water is not preferred for any building material.
Controls Airborne Sound Transfer	X	X	X	X	X	X	Foams, cellulose, and fiberglass reduce sound transmission.