

Sustainable Pavers for Cold Climates | Earth911.com

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Every construction or home improvement project is a little more complicated for people who live in climates with severe winters. You just have to plan a little harder — and sometimes pay a little more — to come up with solutions to potential problems from ice dams to frost heave.

You've probably already figured out that those solutions are usually a combination of material choice and installation quality. This is certainly true for landscape pavers. If you are also concerned about finding solutions that don't harm the environment, we've done the preliminary research on [eco-friendly pavers](#) for you.

How do the green options hold up to the freeze-thaw cycle of a Northern or Midwestern winter? Let's find out.

Material Choices

[Spall](#) refers to cracking and flaking of the paver itself. It occurs when water seeps into the material of the paver, where it then freezes and expands. This is primarily a problem in porous materials like concrete or brick but can occur in natural stone as well.

Even among porous materials, there are variations in resistance to spall. [ASTM C1645 – 16](#) is the standard for testing freeze-thaw and de-icing salt durability of concrete interlocking pavers, while [ASTM C67](#) relates to clay pavers.

Most contractors will recommend avoiding porous paving materials or treating the pavers with a sealant. Eco-conscious homeowners will [avoid petroleum-based sealants](#). They may be uncomfortable coating their pavers with any kind of chemical because porosity is a primary goal of eco-friendly paving.

Fortunately, even nonporous paving materials can be installed to allow water to infiltrate the ground below through the spaces between the pavers. In fact, that is how all permeable paver systems work. The spaces between the pavers are filled with a particular aggregate rather than mortar. This allows rainwater to pass around the paver and drain through the gaps between blocks.

Permeable pavement may actually be [safer in cold weather](#) regions because it does not accumulate icy buildup. Periodic melting can result in slick, frozen puddles on traditional pavement, but the melted water enters permeable pavement and is not able to refreeze on the surface. That may increase safety, but it does raise the question of frost heave.

Construction Matters

Frost heave occurs when the soil underneath the paver expands due to freezing water. The heave expansion lifts pavers out of the ground. Traditionally, the goal when laying pavement was to create a completely impermeable surface to avoid frost heave. Today, we realize the environmental impacts of runoff and want to keep rainwater and snowmelt onsite to be absorbed in the soil.

Good [stormwater management](#) does not have to doom your landscape to frost heave, however.

A properly installed [permeable paver](#) system should withstand the freeze-thaw cycle. Some sources even claim that soil under permeable pavement systems doesn't freeze as quickly. Interlocking concrete pavers are flexible enough to expand and contract with some frost heave, avoiding the cracking that more rigid pavements are subject to. [Pervious concrete](#) can be mixed to resist the freeze-thaw cycle, as long as the groundwater table is not too high.

Greenest Choices

Among the more sustainable pavements identified in the Earth911 [buyers' guide](#), there is a range of cold-worthiness. GraniteCrete is not recommended for cold climates, but [Timbertech](#), [Truegrid](#), and [Envirotile](#) are designed to weather all seasons. [Invisible Structures](#) claims its Grasspave products can withstand snow plows, while [Techo-Bloc](#) makes permeable pavers that are both weather and de-icer resistant. However, our list is far from complete. If you have installed a sustainable paver that performs well under extreme weather conditions, let us know in the [Earthling Forum](#).

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