

The 'E' in Low-E

The 'E' in Low-E refers to emissivity. Emissivity is a measure of a material's ability to radiate energy. A material with 'low' emissivity absorbs and radiates infrared energy poorly which is the key factor in reducing heat transfer.

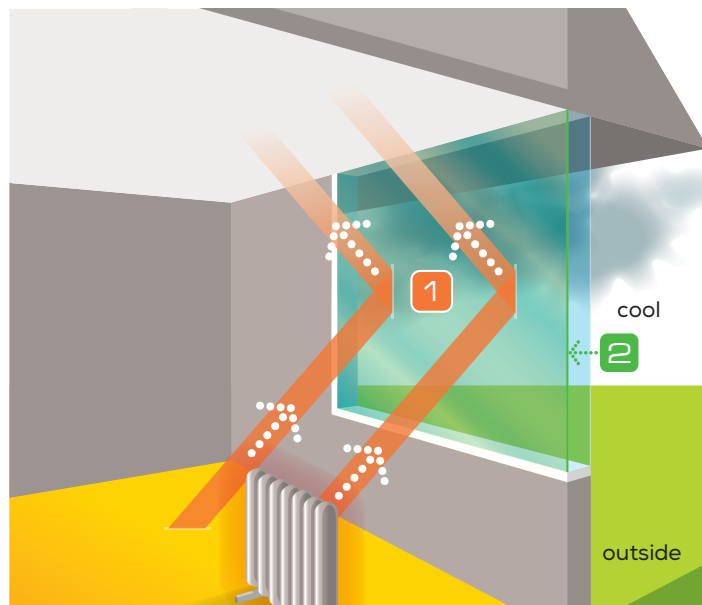
Adding a Low-E coating greatly improves the insulation performance by reflecting re-radiated heat back into the room on cold days and back outside on warm days. Re-radiated heat occurs when short wave infrared heat energy (part of the infrared energy spectrum that we normally feel as heat) is absorbed in the interior of the building by carpets, curtains, furniture, walls etc., and is converted into long wave (low energy) infrared heat. The low-E coated glass reflects this long wave heat radiation back into the room on cold days. See FIG.1.

Conversely, on warm days, short wave infrared heat energy is absorbed by the glass and by objects outside the house such as cars, footpaths, driveways, window sills etc and is converted into long wave infrared heat energy. The low-E coating now works to reflect this energy back outside reducing the overall heat gain through the window. See FIG.2.

The lower the emissivity of a coating the better the glass performs in reducing heat transfer. A black body is the perfect emitter with a surface emissivity of 1.0. Comparatively, ordinary clear glass has a surface emissivity level of 0.84, meaning 84% of the absorbed heat is emitted through to the colder side.

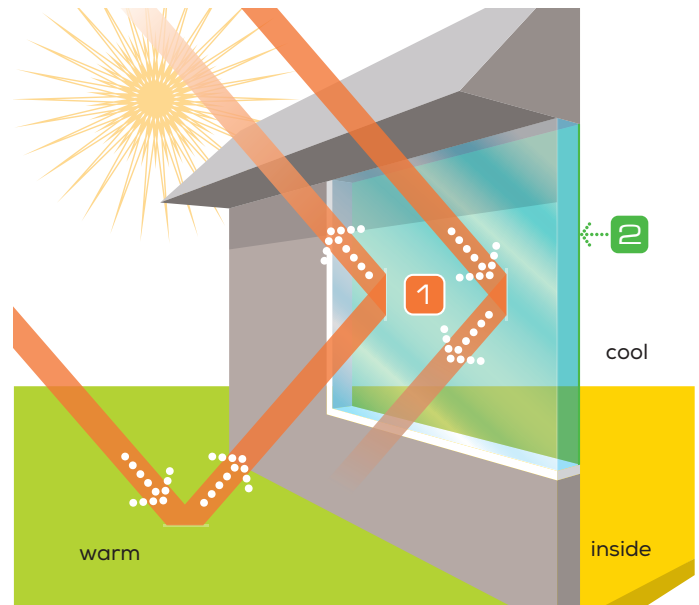
The lower the emissivity number, the less absorbed and re-radiated heat is passed through to the colder side.

FIG.1: HOW LOW-E GLASS WORKS ON COLD DAYS



1. Typical oil bar heater energy and stored energy being released from floors (this stored energy may passively collect during the day from the sun's direct transmission).
2. The Low-E coating assists in reflecting this heat back inside.

FIG.2: HOW LOW-E GLASS WORKS ON WARM DAYS



1. Sun's direct intensity, short wave infrared heat energy, strikes the glass surface and surroundings converting this energy into long wave (low energy) infrared heat.
2. The Low-E coating assists in rejecting this heat back outside.