

## 7. Aluminum roofing and the environment



Green is “in”. Concerns about global warming, dwindling non-renewable resources such as petroleum, and the effect on our quality of life are all making people much more aware of our impact on the environment. Marketers have already figured out that the majority of people want to do something to help, and they will claim to be “green” on the occasionally good, but usually flimsy basis. To be green, you need to “Reduce, Reuse, Recycle”.

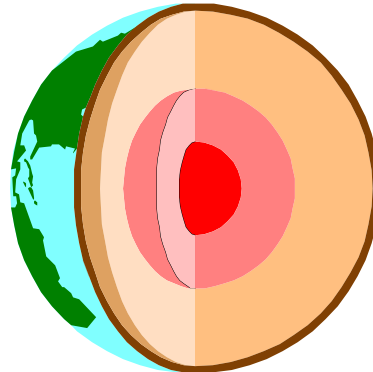
The “reduce” part refers usually to reduction in energy use, but also applies to the use of manufactured materials, as they often use non-renewable resources as well as energy. The “reuse” part refers to making our products have multiple uses, including after the product’s functional life is finished. It also refers to the materials derived from renewable sources, which then participate in a cycle of consumption and replenishment. The “recycle” part generally tries to redirect the waste out of the landfills, and into a resource stream where it can be used productively.

In my opinion, you need to be contributing positively to each of the 3R’s to be considered “green”.

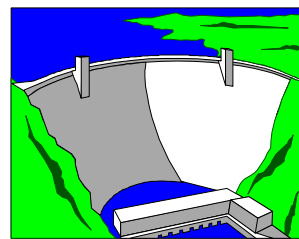
### 7.1 Reduce, reuse, recycle

Aluminum is the third most common element in the Earth’s crust, forming 8.1% by mass, with oxygen at 46.6% and silicon at 27.7%. It is substantially present in granitic rocks (the ones that make up the continents). We’re not running out of aluminum anytime soon. Of course, it takes a lot of energy to refine aluminum from its ore, but fortunately, much of the aluminum we use comes from the refineries in Quebec, who use clean hydroelectric energy. Once aluminum is in its elemental state, it takes very little energy to remelt it and recycle it for other uses.

Another aspect of “reduce” is to move away from the concept of



74.3% of the Earth's crust is silicon dioxide, which we know as sand. All the other elements account for 25.7% and aluminum contributes 8.1%



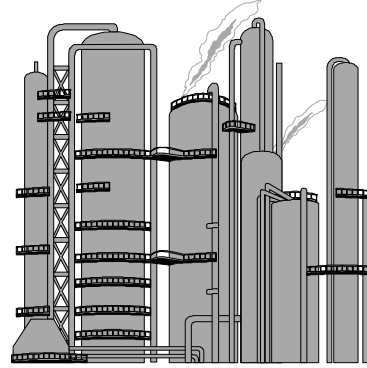
Hydro-electric power is a relatively clean and renewable form of energy.

planned obsolescence, which is effective as a means to get consumers to buy more. An asphalt roof is really a temporary covering, that usually is replaced well before its advertised lifespan expires. This is good business for the shingle manufacturer and the roofer, but it is not good value for the homeowner, or for the environment, as the old shingles usually end up in a landfill, and must be replaced by new petroleum-based product. On the other hand, when you install an aluminum roof, it will probably be the last roof that home will ever need.

It is possible to reuse our aluminum shingles if you need to make changes to your roofline. By clipping off the tabs, you can remove and reinstall the shingles without any damage to them. Of course, those shingles which were trimmed to fit the perimeter may or may not fit again, but the majority of the shingles can be reused. How many other materials can boast this ability?

At the end of the process, any aluminum scrap that remains is actually valuable as scrap metal. Therefore, all the aluminum you use for the roof can be recycled back.

Why the PRS System is right for you.



Asphalt is what's left over after all other products have been distilled off (gasoline, heating oil, heavy oil, etc.) from petroleum



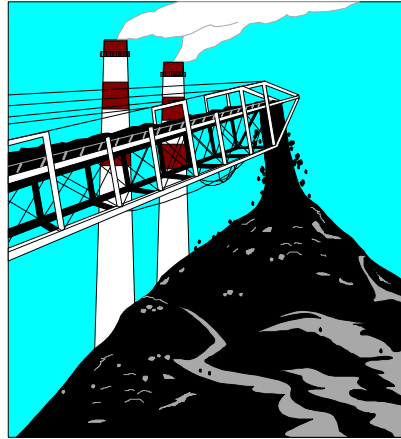
Most shingles end up as landfill.



## 7.2 Carbon reduction

A major element in the discussions for a more environmentally-friendly society is the need to reduce the amount of carbon we are cycling into the atmosphere as carbon dioxide and methane gases which underlie the greenhouse effect.

The Kyoto protocol has as one of its key elements the “trading” in carbon, with the goal of allowing consumers of carbon to buy “carbon credits” from entities that have not used up their quotas. The Canadian government has proposed a target reduction of one ton of carbon per person per year. By buying a 2,000 sq.ft. asphalt roof, the homeowner is consuming about 3,000 to 6,000 lbs. of carbon (since most of the weight of the shingles is asphalt). If the roof lasts only half of its life (say, 13 years, instead of 25 years) before it is replaced, then the homeowner accounts for the consumption of 6,000 to 12,000 lbs. of carbon in 25 years. By contrast, the consumption of carbon with the installation of an aluminum roof will probably be in the 300-500 lb. range, mostly due to the underlayment and water-proofing membrane. As well, this consumption is done once for the remainder of the life of the house.



Most of our current energy consumption involves carbon derived from petroleum coal or natural gas.



This roof is 13 years old. Product installed is 25-year 3-tab asphalt shingles. Since the picture was taken, owner has replaced this with an aluminum roof.

### 7.3 Energy reduction

There are claims by some manufacturers that putting on an aluminum roof will save energy in winter. I don't buy that claim, because to be effective, the aluminum shingles should be reflecting heat back into the house, and for them to do that, the insulation and ventilation will need to be pretty abysmal.

On the other hand, since aluminum will reflect anywhere from 60-80% of the radiant solar energy away from the house, there is the possibility of savings on energy associated with air conditioning.

Other roofing materials may also help in reducing the air conditioning need if they are similarly effective in radiant energy dissipation. Some coatings based on Titanium Dioxide apparently have up to 90% dissipation rating. At this time, I am not aware of any steep-slope metal roofing manufacturer using this type of coating to reduce energy absorption by the roof.

### 7.4 Recyclable materials

Most metal roofs are recyclable. Scrap copper, steel and aluminum readily find dealers to pay good money to buy these metals from you. Non-recyclable roofing materials include asphalt shingles, cedar shake and cement tile.

