

## Some technical stuff on asphalt shingle roofing

(Too much technical stuff on asphalt shingle roofing)

by: **The Great Canadian Roof Doctor** [www.CdnRoofDr.com](http://www.CdnRoofDr.com)  
with offices in Victoria, and now in the Comox Valley

March 20, 2016



We **extend the lifespan** of both new and existing asphalt shingle roofs by “**weatherproofing**” them!  
Sealing your roof will save you thousands, and will preserve its good looks too.

### How long do shingles last?

In general, asphalt shingles last up to about 20 years on the Island (“if you’re lucky”, some say), and 15 years is a fairly common time to re-roof. On the mainland where greater temperature swings occur (like in Kelowna), the useful life often tops out at around 15 years. This was the case with the “20 year” shingles, and still is the case now that they have been **renamed** to be “35 year” shingles, without any physical change in the shingles themselves. Those lifetime (or “50 year” shingles) can show up with extra thickness (but not always), and extra layers (but not always). The extra layer “architectural design” can look very nice; but there will not normally be a performance improvement (other than better wind resistance due to the extra weight), because a stable thin layer of the base asphalt is just as waterproof as a stable thicker layer (if supplied), and there is no change in the granule layer on the top.

So how can the manufacturers claim a longer useful shingle life, if the shingle design isn’t changing? The answer is that they **don’t** claim a longer shingle life ... just a longer warranty term. Those “35 year” or “50 year” marketing phrases refer to a warranty period, not to life expectancy of the shingles.

This would be an expensive problem for the manufacturers when warranty claims start to flood in at 15 or 20 years, if it weren’t for one thing ... instead of changing their shingles, they changed their warranty conditions. We should look at the warranty ...

### Asphalt shingle warranties

There is nothing in (or missing from) any manufacturer’s “Limited Warranty”, that is different in any significant way from any other manufacturers’ warranty, that I have seen. This could change though. Here are links to some actual current Limited Warranties for asphalt shingles:

Owens Corning <http://roofingca.owenscorning.com/docs/warranty/LifetimeWarranty.pdf>

Malarkey <https://malarkeyroofing.com/uploads/Shingle-Warranty.pdf>

IKO <http://www.iko.com/residential/homeowner/canada-warranties/>

GAF <http://tinyurl.com/GAF-Steep-Slope-Warranties-pdf>

CertainTeed <http://www.certainteed.com/resources/GeneralAsphaltShinglesWarrantyEnglish.pdf>

BP <http://tinyurl.com/bpcan-shingle-limited-warranty>

Here are what I see as the four key “Limited Warranty” terms:

- Only “**manufacturing defects**” in the shingles, **that cause leaks**, are covered by the Limited Warranty.
- The manufacturer will pay to repair, replace, or clean (at its option), any shingles that are **defective under the terms** of the Limited Warranty.
- **The manufacturer determines** if the shingles are defective or not.
- Warranty liability is **prorated** [decreasing over the warranty term], in a straight line toward zero.

If your “50 year” shingles that have received normal care have lost all of the granules from their exposed surface after 10 years of use, and the (now visible) layer of black asphalt is dried out, splitting, curling, brittle, and starting to crumble ... you do NOT have a warranty claim.



To have a claim, you still need to have a leak, and you need to find the two shingles (or whatever number) that caused the leak. Next, you must get the manufacturer to agree that those two shingles leaked because of a “manufacturing defect” (which they do not define). Then you have a claim. If there was instead a “design defect” in the shingles (like failing to incorporate a system that would have kept the protective granules in place), then this would not be a warranty claim, even if there were leaks. Just having a leak isn’t good enough.

If you do get the manufacturer to agree to there being a manufacturing defect, then they will give you 80% (10 of the 50 years have been used up in this example) of the cost of purchasing two replacement shingles of similar quality to cover the warranty claim. You will not receive anything to compensate for your cost of removing any shingles, or installing any shingles, or for any other damage caused by the manufacturing defect.

This sort of warranty coverage is costing the manufacturers close to nothing, so don’t expect a relationship between the warranty period, and the expected useful life of the shingles. So far, I’ve only seen BP admitting to this explicitly in their Limited Warranty. As I write: their Limited Warranty says “The Limited Lifetime Warranty does not constitute and should not be interpreted as a statement or representation as to the durability of BP shingles.” Extending the roof life beyond 15 or 20 years is up to you, and the way to do it is by keeping your roof (as much as you can) like the great roof that it was when it was originally installed, when it still had all of its protective granules.

### **How do shingles work?**

The serious part of a shingle is the water-resistant black layer of asphalt that is used as the back of a shingle. It is made with an internal layer (for strength) of fiberglass, or of rag, paper, or wood fiber (usually called organic), and uses limestone as a filler (for extra weight). The asphalt itself is a mixture of solids and oil.

The asphalt can be destroyed by the UV (ultra violet) rays in direct sunlight though; so a protective layer of shiny, coloured, ceramic coated granules is added to the front asphalt surface while it’s still sticky, to protect the asphalt by blocking the UV radiation from getting through to the asphalt. If this were the whole story, then we should now have a worry free roofing product that will last for a VERY long time. What could go wrong?

### **What WILL go wrong?**

A potential cause of shingle ageing is excessive heat; but this is normally handled well through proper roof venting of the attic space. A bigger problem will be that the critical protective (UV blocking) layer of granules can come off to varying degrees if walked on, hit by hail, blown by wind, washed away by heavy rain (particularly by fast flowing water in the “valleys” where the roof sections come together), or by the evening rain in winter, that sits in the empty spaces between the granules, then freezes (and so expands) as the overnight temperature drops below zero. This reoccurring ice formation can pop/squeeze granules off each time the moisture freezes and expands, and this can repeat night after night during the winter.

The granules are initially stuck to the asphalt of new shingles, but it doesn’t take a lot of effort to get them off. Without the granules, the UV rays will break down the asphalt layer, causing it to dry out (loss of oils), become porous and brittle, crack, and leak. It is this loss of protective granules that allows the UV radiation to break down the now exposed asphalt, and it’s the degradation of the asphalt that causes the shingles to fail.

## What can we do to help?

We need something to keep what's left of your roof's protective granules on the roof; and if possible, to shed water off the roof faster if the asphalt is already getting porous. The Great Canadian Roof Doctor uses our *Dr. Shields Canadian Roof Armor* to extend roof life by protecting against Sun, Rain, Wind, Fire, Ice, Snow, Salt, Hail, Moss, and Algae. This clear acrylic resin is sprayed (as a viscous liquid) on the installed shingles to **weatherproof** them: covering the granules, and filling in the spaces between them ... **locking the granules in place**, and allowing rain to flow over the acrylic covered granules rather than being held between them.

Here are two magnified pictures of the same new shingle ... before it was sealed, and after sealing.



**Before sealing:** with air spaces between the shingle's protective granules. This slows moisture loss, helps moss get established, and as water freezes between the granules, can pop them off.



**After sealing** with our acrylic "shield": covering the granules, and filling in the spaces between them. This removes footholds for moss, encourages rapid water shedding, and keeps the granules in place.

The coating dries in a few hours to a solid flexible sheet, that can move with the shingles as they expand and contract through the temperature cycles. Our penetrating acrylic covering is resistant to liquid water, but porous to water vapour and oxygen, letting your roof breath, and greatly improving water shedding. This characteristic comes from our sealant being a formulation of the same material that soft contact lenses are made of.

As a bonus, the slight sheen of the coating's surface will reflect more of the sun's rays, and will keep your roof, attic, and home a little cooler in the summer. There will also be less heat based degredation to the asphalt.

Shingles are often referred to as being waterproof, but they can still be damaged by extended periods of water contact which leaches oils out of the asphalt. Limited Warranties address this by reducing lifetime warranties (typically to a 12 year warranty) for "low slope" roofs. Definitions vary by shingle manufacturer, but slopes at or below 4/12 (not a notably uncommon roof slope) are often excluded from full warranty. This is because water flows off of shingles more slowly on roofs with less (lower) slope.

## How much does weatherproofing a roof cost?

Prices vary with roof size, pitch, roof shape and roof condition, where any of these could influence our time to complete the roof's cleaning and sealing. To get rid of these variables, I'll put the pricing on common ground. If you were to re-roof your own roof with new, regular, untreated shingles, and on the next day have us seal your new roof ... the sealing would increase your re-roofing cost by about 15% to 17%. Our sealing approach, if started this early, could more than tripple the expected life of your new roof. Our free detailed estimates show you what the costs (and savings) will be into the future for your roof, both with and without sealing.

## **What about moss and algae?**

If you lift a piece of moss off of your roof, you will usually find shingle granules on the bottom side of the moss, that have lifted off with it. Moss can cling to the granules, and it can also trap water there. Damp asphalt will degrade (“dry out” from loss of its oils) faster, and will loosen the bond between the asphalt and the granules.

Algae needs heat, moisture, and food. If algae gets on your roof (watch first for black stains, particularly around those warm roof vents), it will feed from the dirt on your roof (if any), and will eat the limestone in your shingles as a food source ... which will leave the asphalt porous, lowering its waterproofing capabilities.

Both moss and algae can be removed with chlorine bleach (plus soaking, then scrubbing); but bleach will remove the solid part (the “impurities”) of the asphalt and leave the oil. Various detergents (plus soaking, then scrubbing) are used too; but detergents will remove the oil from the asphalt (drying it out), and leave the solid part. The scrubbing will of course speed up the granule loss. Some add TSP! Don’t let it on your roof.

The Roof Doctor uses a low pressure, directed water spray, along with a bagful of experience. This is environmentally neutral, doesn’t remove attached granules, and is completely effective in removing moss and algae. Unlike most de-mossing approaches, we also remove the roof’s accumulated dirt, and spend extra time on the dirt that tends to accumulate at the downstream edges of the shingles. We want this transition point clear, to get the best results with an application of our acrylic sealant at this potential water entry area.

**Note:** If your roof has moss, chemical de-mossing can stop moss growth for up to a year ... manual de-mossing (what we do), for up to two years. New moss can still form on the surface after we seal your roof; but with the moss’s good foothold between the granules now filled in and gone, moss doesn’t have much to hold on to. De-mossing best practices (how and when) are described in our separate “*De-mossing*” document.

## **Is one coat of sealant enough?**

Not normally. We guarantee you will have no granule loss for 5 years with a single coating, but our experience is now indicating that a second coat probably won’t be required for 10 years. A roof inspection at 5 years after the first coat will tell us what to expect for your roof. Three coats (at 10 year intervals) will likely be enough.

This sort of roof sealing has been used in the US for about 21 years now (with two coats being required at the first application), with great success. In Canada, it has only been used for 5 years (for a max. sealed roof age of 5 years), and with a somewhat thicker formulation that doesn’t require an initial second coat. Our 5 year old coatings are still clear right through, and they still have the same smooth surface as new. In combination, both indicate absolutely no degradation at all. We are very pleased, and we believe that you will be too.

## **How long will my sealed roof last?**

When we apply our clear acrylic resin roof sealant, a roof that is still in good enough condition can have its lifespan (and current appearance after we have cleaned it) extended to a minimum of 40-50 years (depending on initial condition), from its currently expected useful lifespan of about 18 years . For stratas, the possible roof related “special assessments” on the horizon can now be avoided, as underfunded depreciation funds will have more time to grow to a roof replacement sized value. We can also show how the roof sealing approach doesn’t just smooth out the cash flow, but that it will also lower your overall roof costs significantly.

## **When should I get my roof sealed?**

We can safely remove moss, algae, and dirt from your roof, without harsh chemicals, at pretty much any temperature above freezing. For the roof sealing we want a dry roof, and a minimum of 10°C (50°F). Given the choice, it’s best to get the sealant applied before the winter freeze/thaw cycles have one more try at your shingles. As for a roof’s age, in general it’s “the sooner the better” to preserve it (and its appearance) while it’s in its best shape as currently possible. It’s not specifically age though that is the determining factor, it’s the roof’s current condition. We will advise further, for your roof, as part of our free detailed estimate.

## **What if the roof is too deteriorated to seal ...**

The Great Canadian Roof Doctor is a full service roofing contractor, so in addition to sealing existing asphalt shingle roofs, and flat roof “torch-on” roofing, we also install, repair or de-moss most roofs: metal, concrete tile, cedar shingle, Gaco, torch-on (flat), or asphalt shingle. If it’s too late to save your roof, we can replace it.

For asphalt shingle roofs:

Because all asphalt shingle manufacturer warranties are about as good (as bad) as each other, and because all shingles lose granules at pretty much the same rate; we offer the better looking “3 dimensional” shingle design (“laminated architectural shingles”), but not the low end (easy to tear) – three tab types. Our shingle choice gives you the greatest value for your dollar, and is available in a wide variety of colours. If you have a different preferred shingle style or manufacturer, just let us know.

If at the time of installation, you have us seal the roof: we will include our own 50 year warranty, with our responsibility being to supply, install, remove, repair, reseal, replace, and clean up as required if there is a problem, and normally without the need to re-roof ... to keep any intrusion to a minimum. There will be no reduction in warranty value over the years. To maintain the warranty, you are required to have your roof cleaned and sealed by The Great Canadian Roof Doctor, at 15, 30, and 40 years after we do the initial sealing.

Oh yes, and unlike the shingle manufacturers’ warranties ... ours isn’t voided if someone walks on the roof. It isn’t reduced in warranty period either if it’s a “low slope” (or even a flat torch-on) roof. We do “cheat” a bit though to be able to offer this ... we don’t let the protective granules come off the shingles. ☺

## **Odds and Ends:**

A colour or brightness change of the shingles around a chimney, or your roof vents, could be caused by granule loss from workmen walking around, repairing flashing in those areas. Here’s what one manufacturer says about walking on the roof voiding the warranty: “... GAF will NOT compensate you for: ... Damages resulting from causes beyond normal wear and tear, such as: ... impact of foreign objects or traffic on the roof.” Roof sealing would have stopped those granules from being broken away even if they were being walked on (“Traffic”), and those “foreign objects” (hail) just bounce right off a sealed roof without incident.

Although we don’t guarantee “no wind damage”, the acrylic seal’s coverage at the bottom edge of the shingles (where wind could catch) can only help improved protection from the wind getting underneath the shingles.

Applying an open flame to either the top or bottom surface of a shingle will produce smoke, then sustained fire; but a flame on the sealed surface of a shingle will not produce smoke, and will not produce sustained fire.

A sealed shingle roof is MUCH easier to clean than one that has not been sealed. Rain can do some cleaning.

Everyone should be putting money aside on a regular basis for their next re-roofing (even if your roof has been sealed). The stratas document their “Roof Fund” (my term) in what is known as a “Depreciation Report”. After sealing your roof, the size of the regular deposits going into your Roof Fund (strata, corporate, or personal) can be reduced. Alternately, they can be continued at the same rate, and also then be building either a parallel Emergency Fund, or Party Fund.

A typical two car garage, 1,500 ft<sup>2</sup> single story “rancher”/“bungalow” (by real estate measurement), sends about 7,000 lb. (3,175 kg) of used shingles to the land fill with each re-roofing.

How about roof tiles? In Europe, the clay, concrete, slate, or even stone roof tiles are normally coated after being installed. In North America they aren’t. They will probably last for 50 years, but it’s up to you to seal in their colour dyes, and to seal over their porosity, that with repeated winter evening freeze/thaw cycles will (untreated) cause the tiles to break off small chips/flakes that will make the roof tiles look worn (in addition to faded). The roof tile’s natural porosity also gives moss, algae, and dirt something to cling to.

### **Our terms, and the fine print ...**

We provide free cost estimates. If accepted, the quoted price in an order won't change. Our terms can vary for very large jobs; but in general we do not require any payment in advance. The first 50% of the cleaning and sealing cost is due when the cleaning is completed. The remaining 50% comes due after all the work (cleaning, sealing, and clean-up) has been completed. We have the Better Business Bureau's sought after "A+" rating, and we're WCB covered ("WorkSafeBC"), so if anyone falls off of the roof while we're there, it's our problem ... not yours. We try to do business the way our customers would want us to do business.

### **In summary ... The natural weathering process of an asphalt shingle roof can be stopped.**

Roof shingle weathering occurs from: **A)** water infiltration into the asphalt, which then leaches out the oils from the asphalt, resulting in a drying out process that weakens the asphalt's bond to the granules, **B)** temperature changes that result in normal shingle expansion and contraction that cause microscopic cracks in the asphalt, which will eventually loosen and dislodge the granules, and **C)** the winter evening freeze thaw cycles common on the Island, that also break the granules away from the asphalt base. These combine to expose the asphalt to UV rays through the loss of the protective granules. The UV rays then dramatically accelerate the weathering process, and the ultimate destruction of the shingles.

The tiny granules, which cover the asphalt on a shingle, do not weather: they are ceramic covered stones, which can last forever when kept sealed in place on the roof.

Thanks to technology we can stop the weathering process on the roof by simply coating the shingle with a clear 100% elastomeric acrylic resin. Our acrylic roof sealer stops water infiltration into the asphalt, and bonds the granules to the shingle. Every 5 to 10 years a shingle roof can be re-sealed which means your roof never has to be replaced. This has obvious cost saving benefits, and greatly reduces your carbon footprint by not sending your old roof to the landfill.

Seal your roof with *Dr. Shields Canadian Roof Armor* and you'll add years, and save thousands. Exclusive to Vancouver Island, our Canadian Roof Armor stops granule loss in its tracks, with over 800 sealed roofs, BBB ("A+") accreditation, and a 5-year guarantee ... you can trust The Great Canadian Roof Doctor to add years to the life of your roof.

**Weatherproofing:** It's the shingle best thing you can do for your roof.

Bob Cassady, P.Eng.  
District Sales Manager  
778.992.1922 – direct Comox Valley line  
1.888.677.6310 – toll free  
[Bob@CdnRoofDr.com](mailto:Bob@CdnRoofDr.com)

[www.CdnRoofDr.com](http://www.CdnRoofDr.com)

