

Membrane Care & Maintenance

Introduction

Cleaning your rubber roof does not have to be one of those dreaded chores that you worry about having to do for days and weeks before you force yourself to finally do it. Of course, you could think like those RVers who justify not doing it at all by saying, "No one sees the roof so why clean it!" Sort of like out of sight, out of mind. But, most of us just grit our teeth and finally get to work.

Obviously, cleaning anything takes time and effort. You can, of course, hire someone else to do it for you, or, you can do the job yourself, minimizing your efforts and leaving yourself with enough time left to get in a round of golf or spend some time with nature in a hammock, fishing, time with the grandkids or whatever else excites your fancy.

A Brief History of Rubber Roofs

Rubber roofing came to the RV industry after a long history of excellent performance in the commercial roofing industry. Ethylene Propylene Diene Monomer, or EPDM for short, was initially introduced to the Recreational Vehicle industry in the 1980's as a less expensive alternative to the increasing cost of aluminum. Another of its many advantages is its flexibility during climate and temperature changes. Because EPDM is strong, flexible and very reliable it has become the roofing material of choice for most RV manufacturers.

Beware of Sharp Objects

Although very durable, the EPDM membrane is thin. You should always avoid low hanging branches and be careful about dragging anything across the roof surface that could easily cut it. If necessary, rubber roof patch kits are available from most RV supply stores.

Talc on New Vehicles

Some manufacturers of EPDM rubber roof use "talc" on the material during the production process. The "talc" is applied to prevent the rubber material from sticking together after the vulcanizing (curing) process. It is also necessary during storage of the roofing material prior to installation on the vehicle. Unless completely removed during the initial cleaning, the powdery residue will eventually work its way down the sides of the vehicle appearing as light white streaks.

Chalking and Streaking

EPDM rubber roofing is subject to "chalking" as it weathers and ages. In the EPDM manufacturing process, fillers or pigments such as Titanium Dioxide, Zinc or Calcium Carbonate and others are used to give the rubber material its white color. As the rubber ages it begins to react to moisture, heat and sunlight, causing the fillers to come to the surface. These fillers are carried to the surface and appear as white or gray powdery residue. Rain or moisture (morning dew) mixes with the fillers and flows down the vehicle forming white streaks. In discussing this with many RVers, we have found that the process usually begins when the roof is 12-18 months old. However, this is only an average and does vary from roof to roof and climate to climate. In some cases, it can be severe at first and then subside over time.

Chalking occurs as a natural process and is not harmful to the material.

As seen in the " Report of Analysis" below, an independent laboratory, S & N Labs, Santa Ana, CA, analyzed the chalky residue collected from a rubber roof to determine its composition. The result of their test (x-ray spectroscopy) indicated high levels of fillers (pigments), 62% calcium and 17% silicon, along with traces of several different elements found in dirt and air contaminates that settle on the roof surface.

S & N LABS "REPORT OF ANALYSIS"

Element	Concentration (% w/w)
Calcium	62
Silicon	17
Sulfur	4.6
Aluminum	4.0
Iron	3.7
Sodium	2.9
Magnesium	2.3
Chlorine	1.8
Copper	1.1
Potassium	0.9

The amount of chalking and the content of the chalk will vary. Chalking amounts will depend mostly on climate conditions and the membrane's response to moisture, heat, sunlight and care. Content of the chalk will change depending on the selections of pigments made by the manufacturer of the membrane.

Most streaks can be easily removed with a good cleaner. For tougher stains on fiberglass and aluminum side panels, use a quality polishing compound or oxidation removal product like Protect All Fiberglass Oxidation Remover & Color Restorer. Of course the best thing is to prevent the chalking and streaking process altogether. A good rubber roof treatment can retard this process and minimize maintenance. You will be able to do this by using the maintenance method described later in this discussion.

Spots — Black, Gray, Pink or Otherwise

An unsightly stain that may appear on a rubber roof in the form of dark spots or broad areas of various colors, is the result of mold and mildew growth. Black and gray are the most common colors of this stain, but it can also appear in lighter colors such as pink, yellow or purple. You may find these spots on your rubber roof in small clusters or in more extreme cases covering the entire roof. A white color is chosen for most rubber roofs not only because it is aesthetically pleasing, but more importantly because it reflects sunlight and heat more efficiently than darker colors. The unfortunate side of white is that it does not absorb enough heat to generate surface temperatures above 126 degrees. Therefore, the EPDM rubber roofing material will never reach a temperature hot enough to kill this fungal invasion.

More About Mold and Mildew

Since the late 60's, we have known that this phenomena is not a plant or an animal. Mold and mildew is in fact a fungi, or fungal microorganism. The spots themselves are a byproduct of the fungal digestion process. These organisms are ubiquitous; they are everywhere, spreading their spores on the wind. Since this type of growth forms easiest in the presence of moisture, the spots appear to be more common in wet and humid climates. Here the roof becomes a hospitable living environment. Plenty of water and warmth and the spores take hold. Food is the last missing component in the equation of these spots.

Dr. James Kimbrough and Dr. Virginia Peart of the University of Florida have studied these fungi and presented a graphical summary of the elements needed for mildew growth. To have a mildew problem, four elements are needed. This is referred to as the Mildew Square. In order for mildew to proliferate, spores, food, warmth and water must be present. The EPDM and/or TPO roof left dirty and damp is a perfect host. Microorganisms require a source of energy, carbon for cell structure, nitrogen for amino acid synthesis, essential minerals and water. Eliminate one of these elements and the square is broken, the mildew problem is eliminated. Unfortunately the unsightly spots are not.

Cleaning Mold and Mildew Growth from EPDM

With some effort and a good cleaner, you may be fortunate enough to remove some of these stains but most will never come off the roof, no matter how hard you try. One recommendation from within the industry is to use a solution of bleach and water. Our tests and comments from many RVer's indicate that this cleaning method is most often unsuccessful. In searching for alternative methods and chemicals to clean stubborn stains on EPDM rubber, we found that DICOR, supplier of the BRITE-PLY EPDM roofing, in their internet Web site information obtained April 2, 1999, under "Roofing Applications," recommended the careful use of petroleum distillates Xylene, Toluene or Mineral Spirits. Although these are good cleaners, they do not remove mold and mildew spots with any consistent success. If you decide to try using these distillates, do not soak the surface. Dampen a rag with the distillate and wipe the stain.

Preventive Maintenance Measures

Breaking the Mildew Square is the best measure of preventing the fungus growth. Since it is not feasible to physically dry your roof every time it gets wet from rain, morning dew or humidity, the next best method of breaking the Mildew Square is to eliminate spores, food and warmth, the other three essential needs of mold and mildew growth. Keeping the EPDM rubber roof material as clean as possible will help to accomplish this.

Start by thoroughly cleaning and treating your rubber roof three to four times a year with Protect All's Rubber Roof Cleaner and Rubber Roof Treatment. In addition to helping to retard the chalking process described earlier in this article, Protect All Rubber Roof Treatment aids in keeping dust, pollen and other airborne contaminants that settle on the roof, from sticking to the rubber surface. Then, every week or two, you should sweep the roof free of all residue that has settled on the roof. This process will temporarily eliminate the spores, food and the dusty environment that captures moisture and feeds the growth and accumulation of mold and mildew. As the roof continues to accumulate air-born contaminants, the Mildew Square again begins to develop, so frequent sweeping is important for effective preventative maintenance.

How often you need to sweep off your roof will be dictated by both your seasonal and living environment such as exposure to moisture from rain, morning dew, fog and snow and airborne contaminants such as dust, sand, trees, smog and even your proximity to freeway traffic and airports that emit large amounts of pollutants. Rinsing the residue off the roof with water is not recommended for two reasons; moisture is one of the four elements required to establish the mildew square and the dirty water will create additional clean-up of the sidewalls and windows of your RV. Sweeping regularly is less time consuming and requires less effort than washing your roof and your RV. Thus, you won't mind doing it more often.

It is important to note that although the dark spotting is unsightly, the growth and spread of mold and mildew does not harm the integrity of the roof. A side benefit of keeping your rubber roof clean will be the reduction, or if you are really diligent, elimination of, the dreaded black streaks!

Maintenance Tips

Items you will need to complete the task.

- Soapy water
- A sponge mop for application.
- A scrubbing sponge or a soft bristle-brush for excessive oily grime and hard to reach areas.
- Towels to help dry any areas that are hard to reach and to keep cleaner from going over the siding.
- A 5-gallon pail filled with water, (Remember, water weighs 8 lbs. per gallon).

CLEANING

One simple note of caution before you start. Remember, we only want to clean the roofing. Do your best to keep the cleaner, water and chalk residue from running down the sides of the vehicle. The chalk has been known to stick to windows and siding like glue. We suggest a "sponge mop and bucket method" of cleaning so that only the roof gets the cleaning. Doing it this way, you do not have to clean the entire vehicle.

We suggest sweeping or dusting loose dirt off the roof before starting. If you feel you must use a hose, do so only before cleaning and only as a method of getting the loose dirt off the surface. Be sure to rinse the entire vehicle thoroughly as you rinse off the roof to prevent any chalk and roof grime from sticking to the siding. Because Protect All Rubber Roof Cleaner is a strong cleaner formulated to loosen roof grime and chalk, do not use the hose to rinse the cleaner and chalk residue off the surface during the cleaning process. This can leave more streaks down the sides of the RV that may be difficult to clean off.

Begin cleaning at the front of the vehicle and work your way back to the ladder. Clean the surface in 3-4 foot sections. In this manner you will use the least amount of effort, water and product. Keep your rinse bucket handy. Spray Protect All Rubber Roof Cleaner onto the surface and agitate with a sponge mop or soft bristle brush. Then use the sponge mop to pick up the dirty residue and wring it into the bucket. Wipe excess residue off the roof with a rag or towel. Repeat the process a section at a time. Depending on how dirty your roof is, you may need to change the water in the bucket one or two times during the cleaning process.

When done, allow the surface to air dry completely before walking on it or applying the treatment. Old or severely oxidized roofs may require cleaning twice to get them thoroughly clean. Remember, as stated earlier in this discussion, the black mold and mildew spots will be almost impossible to remove. A quart of Protect All Rubber Roof Cleaner is usually enough to clean a 35-40 foot roof.

PROTECTIVE TREATMENT

Once the roof is clean, the maintenance process is about 90% complete. Protect All Rubber Roof Treatment with UV Blocker can now be applied to the roof to provide an anti-static and water-repellent finish. The anti-static feature keeps dirt from sticking to the rubber. Most of it will blow off the roof. Just sweep or dust for quick clean-ups. Applying this water-repellent product on the EPDM surface minimizes moisture and this, in turn, can help reduce chalking.

Again, start at the front of the vehicle and work your way back to the ladder. Spray Protect All Rubber Roof Treatment across an area about 3-4 feet square. Spread the product thoroughly and evenly with your sponge mop, much like waxing your kitchen floor. Proceed with this method in sections working your way toward the ladder. Remember that all you are trying to achieve is a thorough and even coat. Be sure the treatment is completely dry before walking on the surface. Approximately one-half quart of product will treat a 35-40 foot roof.

Protect All Rubber Roof Treatment applies as a protective and durable coating that is both safe and compatible with all rubber roof systems. If you wish to create a sheen on the newly treated surface, buff it lightly with a dry soft cloth.

Avoid walking on your membrane roof with dirty and oily shoes. Also, if you are not careful, the dirt and grime that settled on the surface can be ground into the material making it much harder to remove. As pointed out earlier, some suppliers of the EPDM rubber material recommend the use of petroleum distillates for specific cleaning purposes. The products on the market that utilize a petroleum distillate in their formulas have also experienced a high degree of success in treating the roof surface. Protect All, Inc. has sold over one-half million treatments of our original Rubber Roof Treatment formula. This is a testament to its effectiveness and popularity among RVers throughout the US and Canada.

Due to new technology and introduction of new additive materials, Protect All, Inc. has found it unnecessary to include a paraffinic petroleum distillate in our New Enhanced Protect All Rubber Roof Treatment formula. Our new formula has improved durability for longer lasting protection and has made it unnecessary to hand dry the treatment. Just let it air dry.

Note: Try to perform your roof cleaning and treating in the shade or early morning. When the roof is too hot, the treatment may dry faster than you can spread it making it difficult to get an even, thorough coat. You will also find it a more pleasant process. In cooler weather, be sure to allow extra time for the roof treatment to dry. It is best not to get the roof wet for a period of one to two days after application. For best results, check your local weather report searching for two days of dry conditions before applying the treatment.

DAMAGE REPAIR

It is recommended that all repair work is to be completed by an authorized installer only. Do not attempt to repair the membrane with any products other than approved materials by Roofing & Waterproofing Solutions Ltd. Some sealants may be petroleum based or other chemical based that may react with the membrane.