



The Salt Air You Love Is Destroying Your Investment

by Lynn Burkhart, Jr.

Most people dream of one day living by the ocean, but few think of the damage this environment can cause. If you live on or near coastal areas, chances are your air conditioning unit will soon need an expensive overhaul or need to be prematurely replaced.

Just like the ocean erodes the beachfront, ocean air erodes metal surfaces. In terms of your air conditioner, corrosion of outside condenser coils from salt air exposure turns aluminum coils into powder and makes them useless for cooling your home.

On Florida's Gulf Coast, in the tropical area of Ft. Myers, 30 air conditioning units were recently in need of replacement because of salt air exposure. Seeing them, you might think these units were quite old, but that was not the case. This devastating failure had occurred in only 18 months! Thankfully these units were covered in part by warranty, but the majority of cases are not as lucky.

The corrosive environment of seashores and their high salt concentrations plays havoc on outdoor HVAC equipment. Since replacement of condensers can easily destroy your budget, it is necessary for homeowners and business owners alike to understand corrosion and take action before it is too late.

Cause and Effect

Near the ocean, salt fog is generally present during early morning hours, rolling in and settling on surfaces. We have all seen it on our car windshields and tasted it in our mouth. This depositing of salt (sodium chloride) on surfaces is the culprit in coastal corrosion.

Many metals, such as the aluminum AC coils are made from, naturally have a microscopic layer on their surface to protect from corrosion. For aluminum, this layer is called aluminum oxide. For iron, the layer is iron oxide. In each case, this layer acts to prevent corrosion from occurring.

However salt, or actually the chloride part of salt, changes the ability of the

oxide layer to protect the metal. Chloride always breaks down this layer, causing pockmarks to form, which is known as pitting of the aluminum. Eventually, the problem gets so bad that the coils themselves disintegrate.

Pitting is made worse in areas with high humidity and high temperatures. The state of Florida has been found to have one of the highest rates of corrosion, and the Cape Canaveral area has been recorded as being the most corrosive site in the continental United States.

Adding to the problem is the fact that the combination of aluminum and copper has been found through testing to be more sensitive to corrosion than other metal combinations. The very metals your outside condenser coil is made of are the worst to have outside!

In addition to ruining the integrity of the condenser unit, coastal corrosion also increases your power bill—as the coil corrodes, efficiency decreases, and the cost per hour of running the unit increases. You see, with reduced efficiency, the AC unit has to run longer to provide the same amount of cooling.

For example, a new unit may take an hour to drop the indoor temperature down 10 degrees. That same type unit, after being corroded by salt air, may take an hour and a half. Simply by exposure to the elements, your monthly AC power bill increased by 50 percent.

Since it is unlikely that the coastal homeowner can stop salt fog from occurring, there are only two choices. The first is to live with corrosion and do nothing except pay more for electricity and continue to replace units prematurely. The other choice is to go on the offensive, and attempt

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to do something about the problem. Fortunately, there are several do-it-yourself options available to homeowners.

The Best Defense Is a Good Offense

Homeowners can reduce the effects of salt air corrosion simply by rinsing off their condenser coils with water. Salt is relatively easy to wash off, and the more often the coils are rinsed, the better the situation becomes. Daily washing is then a very inexpensive, albeit highly annoying, method of helping to control metal corrosion.

Another method is cleaning and applying a specialized coating to your condenser coil. There are a number of coatings on the market intended just for the purpose of reducing or eliminating salt corrosion.

Most coatings of this nature are tested in what is called an "accelerated weathering chamber." These chambers expose the coating to continuous cycles of heat, humidity, salt fog, and industrial fumes and vapors. This continuous testing indicates how well the product might perform in an actual coastal environment.

It is called "accelerated" since the nature of the testing is quite severe, and one hour of exposure is equivalent to multiple hours in a coastal

environment. Generally, most testing is stopped when the test specimen hits 4000 hours in the chamber.

There are many options to consider when searching for a solution to corrosion. A good protectant should be non-flammable and water-based in nature. Also it should be proven to work in a salt-spray chamber for a minimum of 2000 hours, preferably 4000 hours. The coating procedure itself should be simple. No lengthy, time-consuming methods should be necessary to apply the coating. Finally, the cost of the product should be reasonable and performance should work for at least a year.

These coatings do not require the constant attention of a daily washing; however, many require removal of the coil and shipment to another location, which can be a huge expense and inconvenience to the average homeowner. There are some specialized coatings that can be applied on site by a contractor or homeowner, saving money while providing superior protection up to a year or longer.

Protecting your valuable air conditioning and HVAC equipment is something that anyone can do to some measure. On-site application of a specialized coating may do much more to improve operating expenses and stop costly premature replacement.

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