

Rust is often likened to a cancer, and the more you know about it and understand how it works, the more that likeness becomes true. Like cancer, some rust can be cut out, treated and have no worries of it ever returning. Some rust will never be able to be fully eradicated on your budget, but with some treatments can be slowed down and the life of the car extended. Some rust is so bad, it's not even worth trying to save- death is near. Now the one exception to the rule is money and resources. Even with cancer, you can probably survive the longest if you have better, more expensive care. With rust, you can actually eliminate even the worst rust if you have enough time, resources and money. All you need are ALL the panels that are needing replaced whether new or off a rust free donor car. At work we have a Chevelle we're re-doing that is getting all new panels EXCEPT the roof, both rockers and part of the firewall. If this were a normal Chevelle, you'd probably just find a different body to start with that was rust free. This one, however, is a numbers matching 1967 SS car. Very rare and capable of pulling 6 figures at auction with a full restoration to factory specs, like the one we are doing to it.

I'm going to classify rust 3 ways:

Surface rust- This will likely be a brighter orange in color than most set in rust. The brighter it is, usually, the fresher it is. This is the easiest of the rust to eradicate. You can get this media blasted, but there are many chemical treatments that work well when rust is in this stage. The metal will feel rough, but have no pitting.

Set in rust- This will be darker and rougher. It will also show pitting. It may also show signs of the rust flaking off. The more the rust is set in, the thinner the panel is in that area. This type of rust will most likely need blasting and maybe even patches or new panels. Trying to treat this rust solely with chemicals may slow it down, but you'll only be delaying the inevitable.

Rot thru rust- This rust will definitely need patches or a whole new panel depending on the extent of your project. You should also plan to do a lot of blasting inside the areas you cut out. Usually when cars get to where they have this level of rust, the rust is like an iceberg- you're only seeing a little of it, the rest is hidden behind the surface.

REMOVAL OF RUST:

Media Blasting- this can be as little as using a little blaster in your driveway to having the whole car sent away to someone and have everything stripped from the shell. If you are doing a full restoration or have large amounts of rust repair areas I suggest sending it somewhere. It's a dirty, horrible job to do and if you have large areas you can sometimes have it done by professionals cheaper than you can buy a decent sized blaster and the sand. There are many forms of media used in blasting, from sand, walnut shells, glass bead, baking soda, etc. They all work but some are better than others, and more expensive too. My uncle got a quote to have his 31 Model A soda blasted- \$1500. He ended up finding a place to do everything for \$800 and they also primed all the bare metal when they were done. If you are blasting it yourself I recommend you grind as much of the rust off as you can and just use the blasting to clear the pits. You will want to blast until all the darkness is gone from the pits/metal. Any dark specs you see are little spots of rust. It may take a few years, but that little speck of rust can turn into what it was before, and then some. If you're just buying a few years for your car, this is fine, if you're doing a full on restoration, it would be a huge bummer. Of course, it's always good to use blasting in conjunction with other removal techniques.

Panel removal/replacement- This is the best way to go, but also the most costly. Bolt on panels like fenders and doors aren't so bad but panels and other pieces that are spot welded together. This is something you're going to want to consider doing if you're going for a no-holds-barred restoration. The cars are spot welded together like a big puzzle. Sometimes it means cutting into pieces that don't really need replacing to get the ones that do. If this is the case you have a couple choices- replace that part too, or just patch in the parts you had to cut. You'd likely only replace it if you are attempting a factory correct restoration. Spot-weld removal sucks, plain and simple. I've never had much luck with the spot-weld bits and usually end up grinding them thru the panel I'm replacing and prying the panels apart. Of course, you'll want to grind off any seam

sealer off the joints so you can see the spot-weld, then grind them or cut them all free. Once you have the panel off you'll likely be able to access areas you couldn't before and may want to do some blasting or chemical treatments in there to ward off any rust. Putting the new panel on is fairly easy once everything has been cleaned and readied. Once you've cut the panel off, you'll understand what will be needed to reattach the new panel pretty well. You pretty much punch holes in the edge of the panel, clamp it to the surfaces it mates to and weld in your holes making new spot-weld. Of course, be sure to check adjoining panels to make sure you have the panel clamped on straight and that all your seams line up with the panels they'll be mated to. Once welded, make sure to protect those seams with seam sealer- the rubbery stuff you stripped off of the seams before removing the spot-weld. You can get tubes of it at auto body supply stores that work in a caulking gun. When welding always try and just weld small sections at a time. If you get an area of a panel too hot, it is bound to warp. Spot welding isn't as big of a deal since the spots are placed apart on the panel. Even so, I will jump around. Say I'm welding in a panel- I'll weld a couple spots at the roofline, then a couple under the rocker, then maybe a couple behind the rear wheel well, then a couple in the door jamb. I'll then go back and repeat the process until they are all done. Always make sure to grind back your welds to where they are flush with the surface of the panel, but not grind thru it. Also, something else I must mention because I've seen it WAY too many times in botched restorations. I've seen people take the damaged panel and beat it in further, then try to lay the new panel over it all and weld it on. I've also seen people not want to deal with spot welds and cut the panel off at the spot weld lip, but leave the old lip spot welded on- Then they take the new panel and weld it over that. These are both no-nos. It will make the panel not only not sit right, but may also throw off all your adjacent panel gaps. Sometimes the new panels need modifications to fit perfect and it takes a lot of clamping the panel in place, seeing what needs trimmed where, trimming, then re-clamping the panel and repeating. The more time you take test fitting your panel, the better it will fit and look when it's done.

Cut-n-patch- much easier than replacing entire panels sometimes, and often, just as good. You can just concentrate on the damaged area and not the whole panel. Also a good idea for areas where numerous panels meet, and other than that particular area, the panels are very clean. You might not be wanting to do a bunch of patching on an investment or show car, but it's perfectly fine for a nice makeover. For patching, it will require you to make some sort of patch panels whether you get them from a donor car, or you make them yourself out of steel. Complicated bends and curves are difficult for the garage hobbyist. I have the fortune of having shears, metal breaks, an English wheel and other metalworking tools at work, but with a bit of work, trial and error, and creativity, you can probably make about anything you need for minor rust repair needs, even some major repairs. You will need to remove the rusty areas of metal. There are many ways to go about this. You'll want to use a method that won't create too much heat when cutting it out. An air nibbler, air shears or body saw work well. A cutoff wheel works too, but generates a lot of heat, so I don't recommend using one unless you space out your cuts to keep the heat down. I like to cut my rust spots out about 1" bigger than they are to begin with. Then I'll feel around with my fingers on the backside of that panel near the hole to make sure I don't feel more rust there. If so, I'll make the hole bigger- enough to remove that rust. Often times, I'll make my hole go to a body line or panel edge if they're close enough. You don't really have to do that, but if I can find a body line or panel edge close to where I'm cutting, I'll use it if I think it will make hiding the weld easier. When you design your patch, there are many ways to make it to work best in your application. Sometimes patch making is a lot of trial and error. The first few you make may not fit well, if at all. The more you do it, the better you get at it and the more you understand what is needed. I like to design my patch panels one of two ways. You can make a panel that will fit perfectly inside the hole you cut and butt weld the patch to the original panel. Using magnets to hold it in place while you get a couple tacks made works well. You could also design your panel to fit behind the panel you cut your rust out of, and overlap behind it, if you have the ability to access the back of the original panel. This will help have better steel thickness and less chance of blowing holes in it from welding heat. You'll be left with a patch that fits below the original panel, which can be easily filled by body filler. Of course, you can also make a patch panel that is a combination of both types, which can work very well in certain applications, but

also take a little more practice and thought to work properly. Always make sure to grind back your welds to where they are flush with the surface of the panel, but not grind thru it. Here's some of the first patch panels I ever made when I did Kate's 87. Please pardon the roughness of my work- with experience, I've gotten much better. Even these ugly panels have held up fine and look perfect after filler.



This is the other side. For this I used a piece that was taken off a rust free donor car- it came out much better than the other side.



Chemical Treatments- I've always been in the opinion that the best way to remove rust was to remove it, not treat it. Of course, some projects may be on a budget, or the tools needed to remove the rust properly are not available. If that's the case, there are a number of chemical treatments that will help slow it down or damn near stop it. The best 2 treatments IMO are POR-15, and Eastwood's Rust Encapsulator. These are both pretty much identical products and work by sealing in the rust. They won't remove the rust you have, but they seal it in so it can't get any oxygen. The rusting process can't continue without oxygen. These products don't work all that well on rust that is in visible areas of the body, but is more for stopping the rust hidden in nooks and crannies behind panels and such. There are other products like Ospho, Rust Fix, and Rust Converter that treat the rust and etch the area to keep back future rust and help whatever fillers or paints you apply stick to the surface. I used to think these magic fixes for rust were a bunch of snake oil, as I had never had much luck with them in my rust repair up in MI. I have seen them used with some success down here in TX though, so they aren't totally worthless. Maybe they don't work well with salt rust but better with rust caused by time and not helped along by salt? Anyways, always make sure to grind or sand off as much of the rust as you can. I like to have it to where the pits are the only area I can still see rust, and then treat it.

Of course, it never hurts to combine all the methods. On a typical rust repair, I will start off by grinding the rusty spot to see what I got- Clean N Strip wheels work great for this. I will then cut where I need to get the rust out. Then I like to sandblast the area and inside behind the panel where I can. Then, I'll apply my treatments inside the panel as best I can- This will hopefully get

any areas I couldn't get with the blaster, and ward off any future rust in those areas. After that, I'll weld in my patch or panel, grind down the welds and see what I got. If everything's good, I usually try and go back and get in behind the panels where I can and add more rust treatment, then spray rubberized undercoating where I can.

Here's another example. I cut a large piece out of a 1/4 where there was a dent and rot thru rust.



I then blasted and treated the inside stuff.



Then I welded in a rust free panel from a donor car and treated the inside as best as I could when done.



You may find when you're done, that you have warped something a bit in your welding or have other dents needing attention. Maybe you have some metal needing shrinking or stretching.