Tech Chat *"tanks" for the memories*

Ken Mortimer

Back in February, we discussed gasoline and within that article I mentioned a little of what can be done, should you acquire a bike with "left over" fuel in the tank. Many times a quick rinse is not sufficient however and having a tank that holds and dispenses clean fuel becomes a major part of the restoration of your motorcycle.

Thanks to many CVMG members, this time around we have the first, last (and lots of in between) words to help you proceed. For the most part, this "Tech Chat" will be copied and pasted from the contributions I received. Thanks to those of you who took the time to write with your experiences. (Less work for me---yeeehaaw!) And we need to also thank Dick Cowling who was the catalyst for this subject with his Tech Chat query in the May issue of the newsletter.

To start off; MY limited fun with tanks has taught me these snippets of wisdom:

-CLR works quite well to clean out old varnish-like gas and light rust.

-Use a length of chain rather than nuts and bolts for sloshing and knocking the rust loose. (It's easier to remove and no need to count the fasteners.)

-The tank coating product whose name starts with "K" and rhymes with "scream" is best left on the store shelf.

-The POR-15 brand tank cleaning/lining kit works as advertised if used correctly.

And lastly; sometimes you need to throw in the towel and seek Professional help or search out a better condition tank.

Member contributions:
Dick asked specifically about an aviation product and these first responses deal with that question.

John Switzer from GPR Section wrote: I grew up in Oshawa and it had a wonderfully accessible airport and on site was Cox aviation supply. Small building packed with mostly Cessna parts but they had Randolph 's Sloshing Compound. It's used in small plane fuel tanks. 10 or so years ago I had run out of Randolph 's and bought a "Kreem" tank sealer. Worked fine until I put High test in the tank and it literally melted so I found more Randolph 's....heaven knows where.

A few years ago, reading about 10% alcohol of some description being put in our gasoline, I looked up the Randolph Company and they now also had the same product with an additive for fuels with alcohol.

I just did an internet search without success. The company still makes traditional aircraft dopes but I can't find a supplier with the sloshing compound. I did find reports of some homebuilt jets that had accidents that were thought to be caused by Randolph 's product melting and fouling fuel feeds due to a jet fuel additive. Perhaps they have pulled the product for now? If so, that's a shame as I have used it in at least 7 tanks with success. Soft yellow rubber liner. Pour it in, pour it out and let dry. 20 years later it's still soft and rubbery. US 1 quart can does about 3-4 tanks.

Sam Longo also from GPR says " I Read your request in the latest issue of the CVMG Newsletter. I worked as an aircraft mechanic for Air Canada for many years including going into and sealing aircraft fuel tanks. The compound you are looking for is called "PRC"....by the way that stands for Product Research Company. Most in the industry just know it as PRC....it comes in different thicknesses and drying times. I believe that you can purchase small quantities through a company called Aviall 7150 Torbram Rd Mississauga toll free # 1 800 284 2551 or try www.aviall.com Hope that helps you out. Good luck"

Dave Dobson checked with a buddy of his who is currently building an ultra-light and replied with the following info: "The product that I used was commonly referred to as Proseal or "PRC'. However Vans aircraft sell a product called "Flamemaster". Try www.vansaircraft.com web store and do a search on "Proseal". This product is used when building a tank from scratch but would probably be impractical when trying to repair a tank. There is a product commonly called "Slosh" that can be sloshed around in a leaky tank. Once it dries you return the tank to service. I think that it can be purchased at "Mopac" on 16 Avenue (in Calgary) but I am not certain. I don't know a lot about this product and may have the name wrong."

Chris Shearwood, (Montreal) wrote in to say: "When I bought my 1951 Ariel VH back in 2002 it was pretty well completely disassembled but the previous owner had had most of the painting and chrome work done. The fuel tank was (and still is) a thing of beauty on the exterior but unfortunately he had done nothing about the serious rust covering the entire interior as far as I could see. I put a piece of chain, some nuts and bolts inside the tank and shook it all around manually for as long as my arms could stand it.

Since then I have learned of an easier method: after putting in the nuts, bolts etc. bundle the tank up in bubble wrap or similar protection and, when your wife is away from home for a few hours, place it in the clothes dryer and let it spin for an hour or two with no heat of course. With the surface rust pretty well loosened up I rinsed the tank many times with rubbing alcohol, filtering the alcohol before pouring it back in for other rinses. After letting it dry thoroughly I coated it with sloshing solution. The one I chose is made by 3M Company, is called Fuel Resistant Coating and the part number is EC-776. It came in a one quart can and cost $73.98 taxes included.

To find it I looked in the Yellow Pages under aircraft supplies (I think) and the first company I tried, A.E.Blake, knew what I was talking about and had the product in stock.

Their phone numbers are: in Montreal 514-332-4214 and in Toronto 416-431-0440. I used a little more than half the quart to do the one tank and found it is easy to use. I think my tank was not leaking so I don't know for sure if it would seal leaks but I guess for pinhole ones it probably would, especially if one could do more than one coat of it.

That should be verified with the manufacturer before trying it. In the seven years that the bike has been running I've only put on a few thousand miles but so far have had no problems with rust in the carb etc. It seems to have sealed up the rusted surface perfectly. One drawback: yesterday I looked at the can, which has been sitting on the shelf all this time, and noticed that this product "is not recommended for alcohol containing fuel" which may be a serious problem as the governments are moving towards gasohol. If one ever needed to remove the coating it is supposed to come off easily with methyl ethyl ketone but I haven't tried this."

Dick Cowling wrote in to say:" Phil Goldsmith of our Ganaraska Section advised me of a product from Canadian Tire for de-rusting gas tanks, it is called EVAPO-RUST, Can Tire reference # 047-7902-2, price $9.99 + tx. for a litre. I've used the product and it works better than other products I've tried. I found that if you use a litre undiluted at first and then leave overnight in the tank to get the worst off from the bottom, then fill the tank to the top with water and leave it for another day. Next flush the tank with water and dry it out as soon as possible - otherwise rust will quickly reform on the cleaned surfaces. The makers of EVAPO-RUST recommend that you dip the cleaned part back into the solution to prevent re-rusting; but in the case of a gas tank this is not practical. Possibly you can prevent further rusting by pouring a small quantity of two stroke oil into the dried tank and swish it around. And before finally connecting the tank up to the carbs, treat yourself to an inline filter(s); - worth the lowering of frustration levels of having to re-clean carbs! Been there - done that! The section members that I've talked to do not favour putting various rust preventers, etc into the tanks, they know of cases where there has been incompatibility with the chemicals in the rust preventers and with modern gasoline's (probably gasolines containing alcohol), and the incompatibility has resulted in gummed up carbs and sticking valves."

From Bob Ritter comes this advice: "I have had experience with several tanks that had quite a bit of internal rust built up and some that had also developed pin-hole leaks. For the stripping or removing the rust, an acid is often used. In my cases I started by using a commonly available and quite strong acid - Muriatic Acid, which is also known as Hydrochloric Acid. It's often used as a cleaner on concrete. Muriatic Acid will readily remove rust and leaves the steel very clean...really too clean, as it will flash rust very quickly afterwards. It also will destroy aluminum or alloy parts (e.g. petcocks) very quickly, so these need to be removed before the acid is applied. (A good idea regardless of the acid or stripper being used.) The other caution regarding the acid is that it is often very harmful to painted surfaces, clothing, and skin - so caution is the word.

And, never add water the acid to dilute it - add the acid carefully to water.

Back to the clean tank: after stripping with an acid wash, the acid needs to be flushed and neutralized from the tank. This can be done with copious water or lots of water and a soda rinse. Some will also recommend coating the interior to seal it with a thin oil. I tried that too, using kerosene and then filling immediately with gasoline to keep the air away and to try and prevent the flash rusting. However, rust was still VERY attracted to form on the tank interior after it was very clean from Muriatic acid, as I found from bad experience. In less than a season of operation, the tank interior was very rusty and the sludgy rust material was clogging the fuel flow and the carburetors! So, my second attempt on this particular tank went back to something else I had researched and used before.

Phosphoric Acid is another acid that works well at removing rust. However, it leaves behind a deposit that will coat and seal bare steel to prevent it from rusting. The coating may not be very durable, however it is an excellent base for paints and sealers that are applied next. For this sealing quality I recommend a particular product that I have used successfully in the past and what I should have used in the first place on this particular tank. It is known as POR-15 and good description of its properties and use can be found on their web site: http://www.canada-por15.com/index.htm My research has indicated other people also recommend this product over other similar products, as POR-15 seems to be more durable and permanent if the instructions for its use are followed. The stripper that they provide for POR-15 seems to be a phosphoric acid base as well. Now after my second attempt, this tank seems to be staying very clean and free from rust. Several other tanks I previously had treated with the same product are also remaining clean and the POR-15 has not shown any sign of coming off the tank interior. In fact, it is so tenacious and good at plugging holes that great care must be exercised when applying it - so as not to get any of it on the exterior painted surfaces, and to see that the fuel petcock is still removed while the sealer is applied!"

The final word goes to **Ross Thompson** who kindly offered up his "trade secrets". Most of you will recognize Ross as a CVMG advertiser who makes his living restoring tin ware and tanks. And many of you, having seen Ross' work will agree that he turns out a top notch product.

Ross writes

"I have been restoring motorcycle sheet metal parts now full time for 12 years and have been a licensed auto body repair tech for 40 years now, so I do know what works and does not when restoring motorcycle tanks, fenders, headlamp shells and rings. One of the main things that make restoration of sheet metal hard is previous botched repairs and tank seal jobs.

The worse thing that can be done to sheet metal is to weld up cracks with brass weld! In welding class 101 in high school they told us brass welding should only be used on "lap" joints and to steel weld all butt joints and cracks. So why is it that I see so many brass welds on cracked fenders and tanks. Using brass weld on sheet metal changes the makeup of steel, it goes from a nice pliable metal that can be stretched and shaped to something that resembles cast iron, and the least little movement will crack it. In other words please do not use brass weld on motorcycle metal that is exposed to a lot of vibrations and stresses, steel weld it! Once the brass weld is in the sheet metal steel the only way to get rid of it is to cut the brass out and replace the steel that it has contaminated, in other words it makes for a lot of extra work and cost!

As for the cleaning and sealing of tanks if you cannot do it right don't do it at all! If you are restoring a tank and plan on re-chroming it or painting it, then the first thing I like to do is to have the tank chemically stripped by my chrome plater, this cleans the outside and the inside of the tank to bare metal. It gets all of the old gas and rust out of the inside of the tank so it can be prepped properly to be sealed. You should have the inside of the tank clean and oil free or don't bother trying to seal it. Now if you have a tank with good paint or chrome that you want to save on the outside of the tank then you won't want to have it stripped.

To get the rust out of a tank without stripping it, it can be done with acids but you have to be real careful because these acids are very corrosive and dangerous to use in a closed environment. The first thing you have to do is to protect the paint on the outside of the tank with a plastic cover like a garbage bag or saran wrap. Then plug up the out lets and have a plug ready for the filler neck. I like to degrease the tank first with a degreaser, TSP or Por-15 have their own degreaser. Then use muriatic acid (used in swimming pools) reduced 5 parts water to 1 part acid (very important) *"do not use muriatic acid full strength"*. It will take about an hour or so to clean the rust out of a tank, longer if it is real bad, (this acid will not remove oils). Then flush the acid out with water to neutralize it. Now if you leave it like this the tank will flash rust again in about 20 minutes, so I use the Por-15 product called Metal Ready that has a phosphoric acid and zinc base that will leave the tank with a pickled like surface on the inside of the tank. Then flush out the Metal Ready with water and dry the tank out with warm air.

The tank will now be clean of rust but it is up to the owner whether they want to seal the tank or not because there still may be some oils left inside the tank. I would say now flush it with a little fuel and it is ready to go back on the bike, the oils in the gas should stop the rust from coming back as long as you can keep condensation out of the tank. To keep the tank free from condensation either drain it and dry it. Over the winter keep in a warm storage or fill the tank with gas and use stabilizer in the gas.

As for sealers I like to use Por-15 because it is more user friendly and leaves a metal like look on the inside of the tank. The Caswell sealer that a lot of people are using seems to be working well and works on the principle that it makes its own fiberglass tank on the inside of the steel tank so it is more like a structure in there and does not have to adhere as well as the other sealers do. But I would be worried about condensation build up between the sealer and the tank and we all know what happens to steel when condensation forms. The other thing to remember about all sealers is that they will not repair cracks in tanks in stressed areas, such as around mounts or tunnel areas that flex. I hope this helps people with the dos and don'ts of tank restoration."

.... Ross

Ross Thompson Metal Finishing
www.execulink.com/~rosst

Please take note that Ross will be doing a seminar on Saturday morning at the Paris Rally dealing with the dos and don'ts of metal work; well worth the price of admission! Thanks to all contributors this month and apologies to our editor for pushing our allotted space envelope!

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