



Cleaning, De-rusting and Epoxy Coating Fuel Tanks Using Caswell Europe Products: GTS1750, Comscale650 and Fertan

Whether you have a motorcar, motorcycle, tractor, garden machine or in fact any item that has a fuel tank that takes Bio-petrol, diesel or a derivative of these, you will know the problem of rust and its destroying nature. Modern fuels can also cause problems with fibreglass/ composite tanks, as the resins are susceptible to attack by the chemicals put into the lead free petrol's.

Fuel tanks made from steel are susceptible to rusting. In the past when leaded fuels were in use, the problem was greatly minimised as the lead caused a barrier coat. As unleaded petrol is now used for reasons of health and environmental safety, older vehicles and engines have to cope with it. The availability of leaded petrol has been vastly reduced all over Europe although there are still some outlets selling it (UK - Bayford Thrust).

Unfortunately modern unleaded fuels, even with an oil mix for two stroke engines, are aggressive to such an extent, that steel tanks can corrode even when full. This is caused firstly by Ethanol, which attracts water and is also a solvent for fibreglass resin and secondly by the added MTBE (methyl-tertiary-butyl-ether), which is being increasingly added to improve the anti-knock performance of the petrol, which Lead previously offered, and to enable the petrol to burn more cleanly. With GRP or Fibreglass tanks and some made of other plastics the Ethanol acts as a solvent to the polyester resin and causes a breakdown of the structure allowing the petrol to seep through.

The best preventative and remedial measure is to kill the active rust and then to apply a special 2-pack Novolac epoxy interior coating, which is designed specifically to be resistant to all modern fuels that have an ethanol content. Do not use if you intend to use old 4 star leaded petrol. and provide a corrosion free tank for an acceptable time.

If the tank is suffering from corrosion the instructions below show how to eliminate this corrosion completely.

Protection Part 1

The De-rusting Process:

With the tank removed from the vehicle ensure it is completely empty of fuel. Please dispose of remaining fuel in an appropriate manner or store for later use. Please remember that discarded fuel and oil is harmful to the environment and to wildlife and aquatic species. If the tank has a good paint that you do not wish to damage you can buy shrink wrap film and wrap the tank in this ensuring that the areas around the petrol cap are taped. We suggest a first layer, then a sheet of aluminium Kitchen foil around the petrol filler cap area followed



by a further shrink wrap layer. This cocoons the tank and provides defence against the products and physical damage.

Close the petrol tap and/ or temporarily seal any open connections. Pour about an egg cup full of good quality washing up liquid into the tank and add warm to medium hot water (50°C to 60°C). Leave this solution in the tank for about an hour, agitating the tank to thoroughly clean the entire inside surfaces. Open the capped filler and plugged unions and drain the cleaning fluid, dispose of this as appropriate. Please do not use a mineral based product for cleaning. Petrol, acetone, thinners or heavy degreasing agents are not suitable for this task unless thoroughly washed out with clean water. Again seal all filler and connector holes and fill the tank with a solution of SD-COMSCALE 650 at about 60°C. This product will work equally effectively between 25°C and 60°C, the heat only speeds up the removal process. You can maintain this temperature for 30mins to 12 hours depending on the rust: shake thoroughly.

Leave COMSCALE 650 to work for at least 1 hour agitating frequently and then check the surface finish to ensure that the rust has been removed. Continue the rust removal process until all rust is gone. Now empty the tank of COMSCALE 650 into a suitable container. It may be useful to filter the COMSCALE 650 fluid through a coffee filter paper as this can be re-used later for other rusted items on the car, bike etc.

Thoroughly flush the tank with water, opening all connectors, to facilitate complete drainage. To accelerate the intended treatment of FERTAN Rust Converter, lukewarm water can be used for the final rinse.

Please note: It is advisable to wear rubber/ household gloves for these and the following procedures.

If you are flushing the tank in a sink put the tank on a soft surface. This prevents damage to ceramic sinks and to the fuel tank. When disposing of the rinse, do not drain it directly into the waste system but dilute it with twice the amount of water and then allow it to go to the drain.

Do ensure and check that the tank is drained completely and then screw the connectors back on, sealing the tank. Pour FERTAN Rust Converter into the tank, which should still be damp from the final rinse. Use about 0.25 litres (8fl oz) for a 10 - 15 litre tank volume, 1 litre in a 40 - 50 litre tank. More may make the job of coating the inside of the tank easier but it is more costly. The petrol tap, if fitted, should be moved to the ' closed ' position.

Now turn and shake the tank, with the FERTAN Rust Converter inside, ensuring that all sides of the tank are completely covered by the fluid. Particular attention should be paid to slanting areas such as frame mounting areas, here it is important to shake the tank well to ensure that even difficult to reach areas are completely covered. It may be advisable to leave the tank lying in several different positions to ensure thorough coverage.



Then completely drain the FERTAN Rust Converter from tank into a clean plastic container. Remove all caps and store the tank for a minimum of 24 hours or longer at a temperature of 20 degrees Celsius.

Refill the tank with the previously drained FERTAN, re-fit connectors etc. and shake tank thoroughly to enable even coverage and then fill up the tank with clean warm water. Leave mixture (FERTAN/water) to work overnight (12 hours) at room temperature. Finally drain the tank and rinse thoroughly to remove any loose particles and leave to dry.

At this stage any petrol caps/ connectors, petrol cocks etc. must be cleaned and rinsed immediately with clear water. Any FERTAN splashes on the exterior of the tank, should the tank not be wrapped, must be wiped immediately with a sponge and water to avoid discolouring the paintwork. This is no less important if the tank has been painted recently.

Although this method may seem to be labour intensive and time consuming, it ensures that the tank is completely de-rusted and avoids the unnecessary removal of material caused by mechanical de-rusting processes. This means the tank has not been weakened in any way as happens with blasting or grinding.

Preparing a Fibreglass or Plastic Tank.

Use 1 eggcup full of Fairy Liquid to 3 litres of Hot water, about 60 degrees C and some small screws (screws are optional) and give the tank a good slosh wash for about 5 to 10 minutes. Pour out the liquid and rinse with hot water. Allow to dry completely and when totally dry carry out the sealing procedure.

Protection "Part 2"

Now we are ready to use the Ethanol resistant Epoxy coating. This is going into an absolutely rust-free tank and will reliably prevent any future corrosion. **Please note that if you are going to use a "LEAD" based fuel (old 4 star) this coating may not be suitable.** The protective coating of the tank interior will be created using Caswell's special 2-Part Novolac Epoxy GTS1750, which has to be mixed with hardener before the coating begins. GTS 1750 is suited to steel tanks but is also the only one to use on fibreglass or composite tanks. The process is similar to that given below. (full instructions are provided with the product).

To start the curing reaction add the entire contents of the smaller can of hardener (Component 1) into the tin of coating (Component 2) and mix thoroughly using a small whisk (by hand or if an electric whisk, then at a slow revolution to reduce a build up of air bubbles).

Ensure the tank connectors are sealed and the petrol cock must be shut. The tank will be dry and rust-free after the de-rusting and coating treatment with FERTAN. The mixed GTS 1750 can now be poured into the tank filler opening. Twist the filler cap firmly into its locked position. At this point it would be advisable to put a thick plastic cover under the tank cap if



the original cap is to be used as this will avoid an accidental coating. If you do not want to use the filler cap then tape a polythene sheet over the fuel filler opening.

Now turn the tank on its side and upside down etc. to ensure a thorough coating from all angles, a typical slosh application. Continue until you consider that the whole surface of the tanks inside has been covered. Then open the petrol cap and petrol drain cock or one of the connectors and drain all remaining liquid into the GTS 1750 container. Please ensure that all residue is properly drained off. Any splashes that have occurred on the exterior paint must be immediately wiped off with thinners (Nitro/Universal cellulose thinner but be mindful of the paint finish) The shrink wrap helps here.

Turn tank so that the largest opening, normally the filler neck, is facing upwards, I repeat "upwards" and let it start to dry for about 30 minutes. The constituents and solvent carrier of GTS1750 are lighter than air and the resin will stay un-cured in the tank unless you do this.

If available connect an air supply or even the outlet of a vacuum cleaner: max 0.2 - 0.4 bar for approx. 180 minutes as this will speed up the curing process. However if not available the resin will cure in its own time.

The solvent is volatile as so it is important to stress that this air supply must not come from an electrical appliance in close proximity to the tank, as the evaporating solvent might catch fire. Keep away from open flames - No smoking and ensure good ventilation.

As was described above, now blow a constant airflow through the drainage opening into the tank for a minimum of 180 minutes so that all solvent residues are expelled. Remember again that it is lighter than air and so ensure that the tank is in the up-right position.

This process will be complete as soon as the coating inside the tank is dry. If the tank has $\frac{1}{4}$ " internal screw thread (internally or externally) an air coupling may be firmly attached for connection purposes, which makes this process considerably easier.

It is of great importance that the air passing through the tank is of low pressure, a maximum of 0.2 - 0.4 bar otherwise the coating, still soft at this stage, could be damaged.

Finally and this requires no further involvement, leave the tank to harden off for a minimum of 5 days at a temperature of 20 degrees C. This may seem a long time but a lack of patience when dealing with the new fuels could cause a breakdown in the sealing at a later date.

Whilst this approach has been developed using the Caswell GTS1750 sealer it can be adapted for other offerings on the market. Please do bear in mind that we have 13 years experience of using and selling this product in the USA and Europe and have many tanks out there protected using this product.



TAPOX, a similar product in our catalogue is also recommended, for metal tanks only, as we have 5 years of using and selling this product. However please follow the instructions as the solvents are heavier than air.

If you have questions on this paper or need to find a company who will carry out this procedure for you please call on +44 (0)1420 474961

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