

COMPLETION REPORT

Client : **Pharmaceutical Company**

Project Brief : **The Internal Repair & Relining of 2 No. GRP Potable Water Retaining Structures.**

Site Address : **Home Counties**

System Spec : **3M Scotchkote™ 165PW**
(Formerly Known as COPON Hycote 165PW)

Film Thickness : **1000 Microns**

Completion Date : **21st October 2009**

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Covac Ref : **902**

SUMMARY OF WORKS

The Brief

2 No. GRP, sectional, potable water retaining structures located in a dedicated plant room and both sized at approximately 7.2m x 1.3m x 1.3m.



GRP – The Problem

The problem faced by all engineers who are responsible for the maintenance of GRP tanks is that even with regular cleaning and chlorination, bacteria such as micro-aquatic organisms will continue to multiply as they are protected in the habitat provided by air filled cavities and fine cracks that often cannot be seen with the naked eye. These cavities and cracks in the internal substrate allow bacteria to nest and proliferate.

The problems start to occur when the water molecules migrating into the GRP encounter other chemicals inside the laminate, primarily water-soluble materials (WSMs) such as the emulsion binders used to hold the glass mat together before it is moulded, or pockets of uncured or only partly cured resins in the moulding. The water molecules can then have a chemical reaction with these substances, forming larger molecules of a new chemical, often acidic – which unlike the original small water molecules cannot carry on passing through the GRP. These larger molecules are then trapped. This is the point at which osmosis actually starts.

Osmotic blistering of the GRP substrate due to water permeation can also lead to deterioration of the gel coat and, subsequently, a surface which is highly likely to harbour and promote the growth of micro-aquatic organisms.

It should be borne in mind that, if ignored, such internal water osmotic blisters will eventually burst putting their contents into the potable water. These chemicals not only have a very unpleasant taste but are also toxic! **For this reason, GRP is not recommended or approved by the DWI for drinking water tanks.**

There can also be numerous areas of corrosion to the steel fastenings which hold the GRP panels together. Black spore fungi which are notorious for spreading on various grades of GRP, predominantly where there is a combination of water and air at an ambient temperature can also be a major problem.

Another common fault associated with GRP tanks is the deterioration of the mastic used between the sectional GRP panels and subsequent leaking of water. The mastic used in these joints often deteriorates rapidly following years (sometimes months) of use and this, combined with the excessive structural movement of the plastic will lead to eventual leaking of the tank. The consequential loss of water through these joints can be catastrophic.

GRP – The Solution

3M Scotchkote™ 165PW (formerly known as COPON Hycote 165PW) offers numerous economic, technical and environmental features and benefits for use in relining GRP potable water retaining structures, some of which are highlighted as follows:-

- WRAS/DWI approved.
- Completely Solvent Free Technology.
- Superb adhesion to GRP substrates.
- Prevents steel fasteners from corroding.
- Provides a completely waterproof membrane, preventing any potential ingress of water which can cause osmotic blistering, air filled cavities and cracks.
- Leaves a surface which has a tough, easy clean, ceramic, tile-like surface combined with elongation properties of up to 35% which will adequately cope with any potential movement of the GRP structure.
- Proven to resist the growth of bacteria such as micro aquatic organisms.
- Provides protection of the existing mastic between the GRP joints against potential attack from chemicals and subsequent deterioration and potential leaks.
- High levels of impact and chemical resistance.
- Reduced downtime due to extremely fast cure times.
- Long life performance with minimal maintenance.
- Excellent track record having been utilized for the repair and relining of GRP potable water retaining structures by many high profile clients.

3M Scotchkote™ 165PW) meets with the above requirements and has successfully been applied by brush/roller and plural component spray equipment to a variety of GRP structures.

COVAC employs competent, trained and focused operatives who always achieve an optimum quality of surface preparation application, resultant finish and subsequent longevity. Due to the highly sensitive



parameters involved in the upgrading of water retaining structures, today's sophisticated increasingly demands much more than just a supplier of product and a separate contractor to carry out the work.

COVAC possesses an unparalleled wealth of experience in connection with the refurbishment of these types of structures and as a Preferred Channel Partner of 3M™ can offer **Single Source Responsibility Guarantees**.

This service offers peace of mind to the client and alleviates any risk of contractor / product supplier disputes in the event of a problem.

We therefore, recommended the following scope of works: -

GRP Manual Preparation

Brush & Roller Application

This pictorial report combines the repair & relining of both tanks.



These photographs show the internal surfaces of the tanks having been drained of water, but prior to any work commencing.







When the tanks were drained, it was found that the walls and floor had been panelled in foam slabs and fibre-glassed. The divider wall and foam slabs were found to be leaking, so all slabs were removed to gain access to the original GRP.





These images show entrapped and stagnated water underneath the second substrate, which was pumped out, prior to the continued removal of the remaining foam slabs.



After all previous coating had been removed, these pictures show the internal substrate of the tanks having been prepared by COVAC Operatives utilizing a combination of both manual and mechanical tools in order to raise a suitable surface profile on the substrate and promote optimum adherence of the 3M Scotchkote™ 165PW.

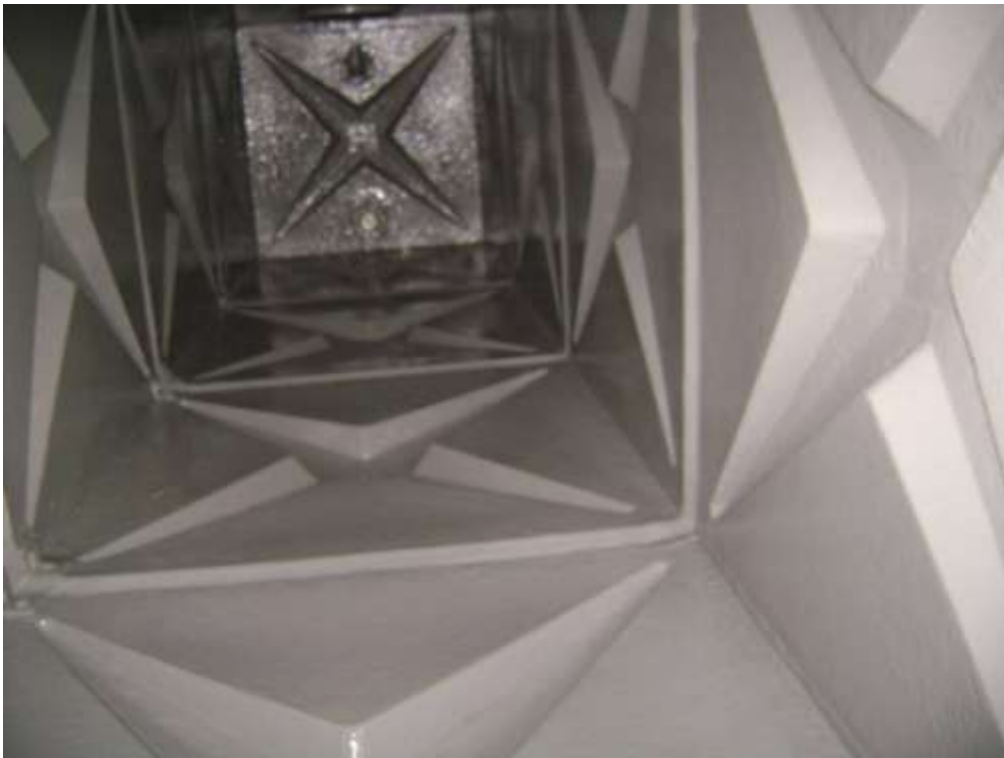


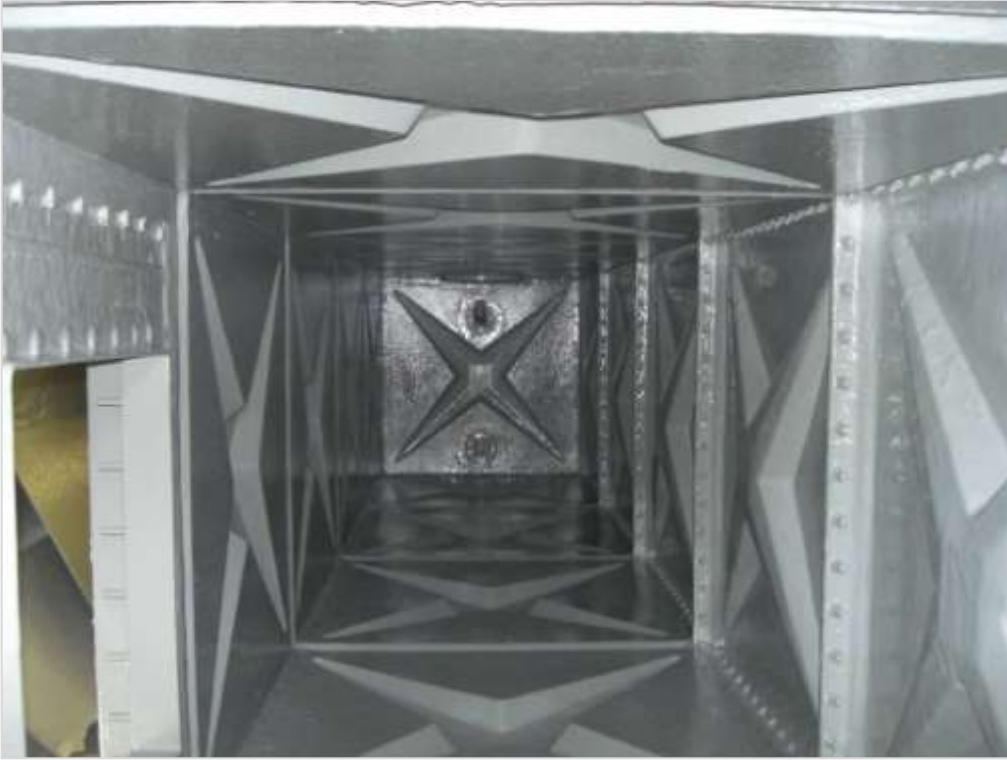
All joints were treated to prevent leaks and allowed to cure.



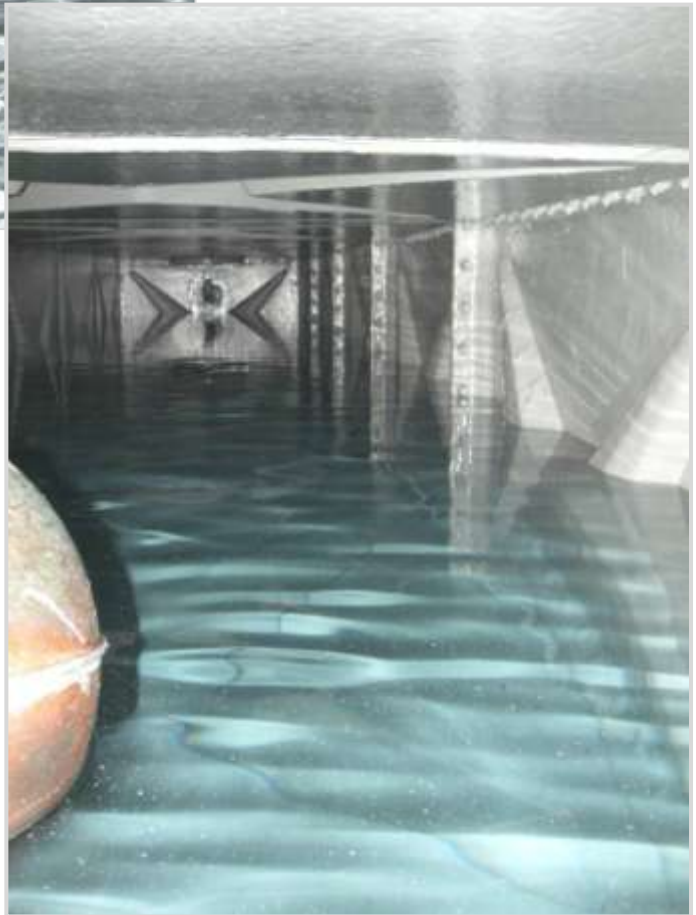


The following photographs show the full and final application of 3M Scotchkote™ 165PW (grey).









On separate occasions, the side access hatches were resealed with flexible gasket sealant before being put back into service and post chlorinated, in accordance with the HSE Approved Code of Practice (ACoP L8).