Covac Ltd, Unit 7, St. John's Business Park, Rugby Road, Lutterworth, Leicestershire, LE17 4HB.
Tel: +44 (0)1455 556631 • Fax: +44 (0)1455 550872 • Email: info@covac.co.uk • Web: www.covac.co.uk

# COMPLETION REPORT

| | | |
|---|---|---|
| Client | : | **Pharmaceutical Company** |
| Project Brief | : | **The Internal Coating of 2 No. Sectional GRP Water Retaining Structures** |
| Site Address | : | **Midlands** |
| System Spec | : | **3M Scotchkote™ 165PW**<br>(Formerly Known as COPON Hycote 165PW) |
| Film Thickness | : | **1000 Microns** |
| Completion Date | : | **21st October 2010** |
| Compiled By | : | **Craig Phillips** |
| Covac Ref | : | **1003** |

# SUMMARY OF WORKS

## The Brief

2 off sectional GRP potable CWS tanks each sized at approx:-

**1 off - 16m x 4m x 3m**

**1 off - 4m x 4m x 3m (with divider wall)**

Both tanks were located externally at ground level.




## 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.

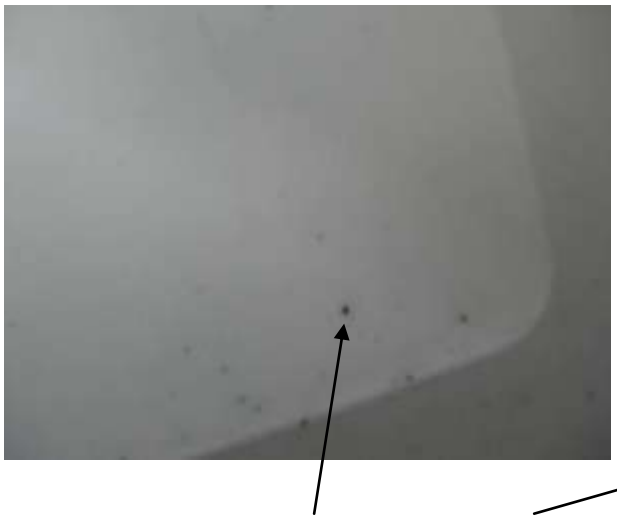
The problems start to occur when the water molecules migrating into the GRP encounter other chemicals inside the laminate, primarily water-soluble materials (WSMs) such as the emulsion binders used to hold the glass mat together before it is moulded, or pockets of uncured or only partly cured resins in the moulding. The water molecules can then have a chemical reaction with these substances, forming larger

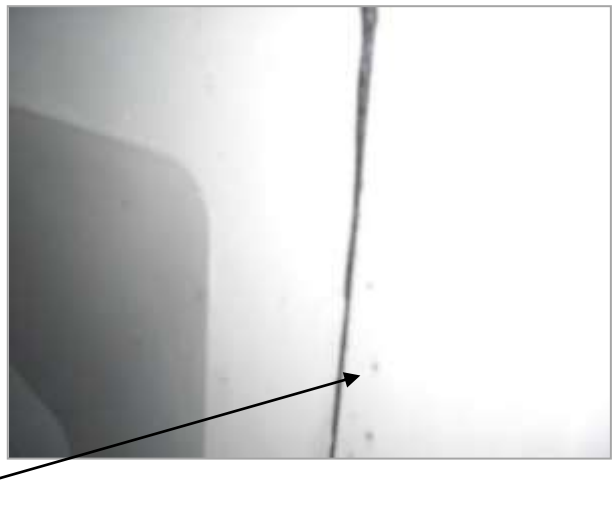
molecules of a new chemical, often acidic – which unlike the original small water molecules cannot carry on passing through the GRP. These larger molecules are then trapped. This is the point at which osmosis actually starts.

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 they is a combination of water and air at an ambient temperature can also be a major problem.





Black mould spores were present within the smaller tank.

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 would therefore, recommended the following scope of works: -*

**GRP Mechanical Preparation**

**GRP Brush & Roller Application to 1 No. Structure sized at 4m x 4m x 3m (with divider wall)**

**Spray Application to 1 No. Structure sized at 16m x 4m x 3m**

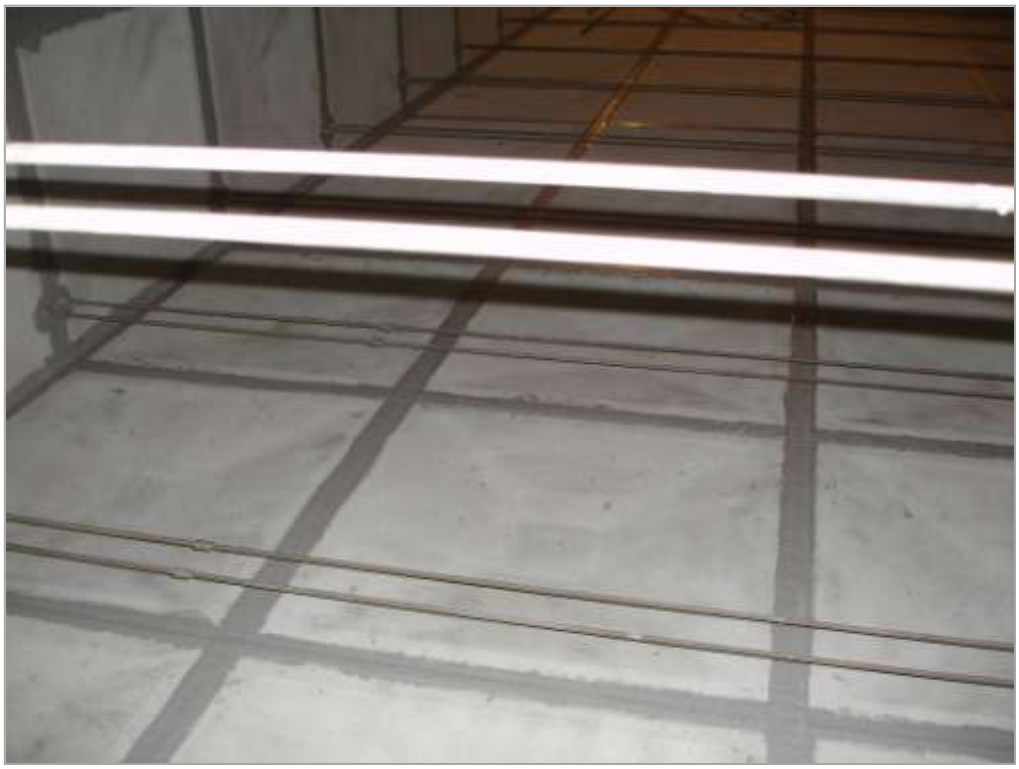
# 1 No. GRP STRUCTURE

# Sized at 16m x 4m x 3m

**These photographs show the internal surfaces of the structure, having been drained of water and prior to relining work commencing.**

**All failing mastic between the sectional GRP panels was cut back to a firm edge, prior to all the internal surfaces of the tank being lightly abrasive blast cleaned to remove any existing coatings and to promote optimum adhesion of the 3M Scotchkote™ lining system, as shown in the above photographs.**

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



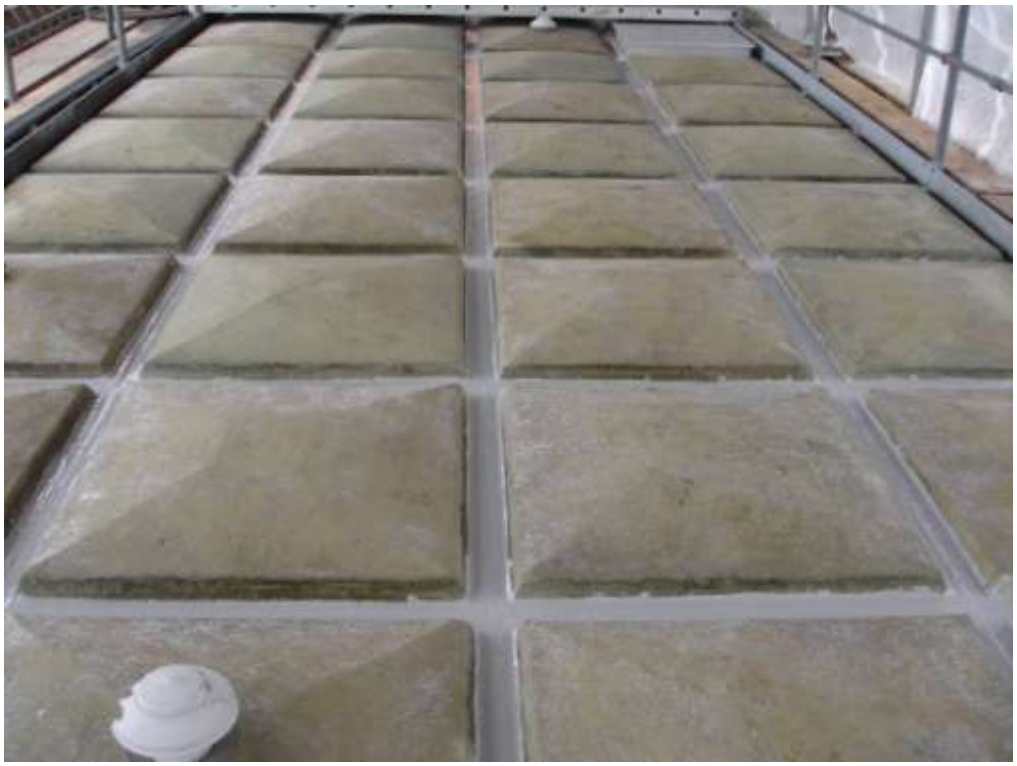
**The following photographs show the internal of the structure after being fully coated with 3M Scotchkote 165PW (grey) Solvent Free Polyurethane, by means of plural component spray equipment.**

# 1 No. GRP STRUCTURE

## Sized at 16m x 4m x 3m
## External Roof Joints

**These pictures show the external roof joints of the structure being prepared by COVAC Operatives in order to raise a suitable surface profile to promote optimum adherence of the 3M Scotchkote™ 165PW system.**

**As with the internal joints of the structure, all failing mastic between the external sectional GRP panels was cut back to a firm edge.**



**These images show the external joint once coated with 3M Scotchkote 165PW.**

# 1 No. GRP STRUCTURE

## Sized at 4m x 4m x 3m (with divider wall)

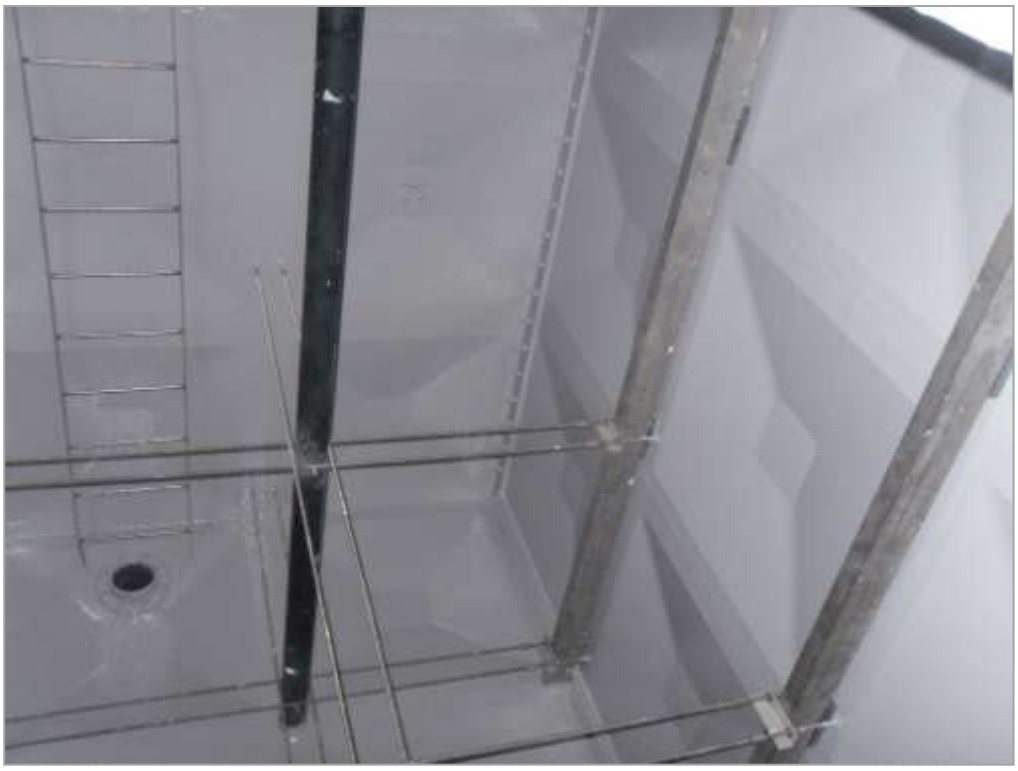
**This part of the photographic report combines the relining of both compartments**

**These photographs show the internal surfaces of both Compartments before work commences.**

**All failing mastic between was cut back to a firm edge, before all the internal surfaces of the compartments were lightly abrasive blast cleaned to remove any existing coatings, thus promoting a suitable surface profile to ensure full adhesion of the coating to the substrates.**

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

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



# 1 No. GRP STRUCTURE

## Sized at 4m x 3m x 3m
## External Roof Joints

**This picture shows the external roof joints of the structure having been prepared by COVAC Operatives ensuring a suitable surface profile to promote optimum adherence of the 3M Scotchkote™ 165PW system.**

**These images show the external joint once coated with 3M Scotchkote 165PW.**