

# ACTAN™ case study

**PROJECT: Protection of pipelines**

**CLIENT: The Environment Agency – Thames Barrier**



# A

100 per cent water based paint system is being used to protect pipework underneath the Thames Barrier in London, following successful trials of an environmentally friendly primer – Actan GS from Pugh & Co International.

A water based adhesion primer for treating galvanized and non-ferrous metals, Actan GS bonds perfectly with the surface to form a film that is transparent, hard, flexible, impact resistant and non-porous. It gives great adhesion prior to the application of a wide range of one and two pack protective paint systems, including chlorinated rubbers, vinyls, acrylics, epoxies and polyurethane.

Developed over many years using in-house technology and in conjunction with a Belgian university, Actan GS has a VOC content of less than 0.1g/litre, is environmentally friendly compared to traditional solvent based products and consequently much safer, quicker and easier for applicators to use.

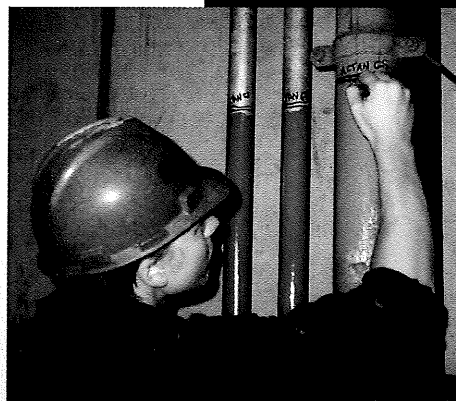
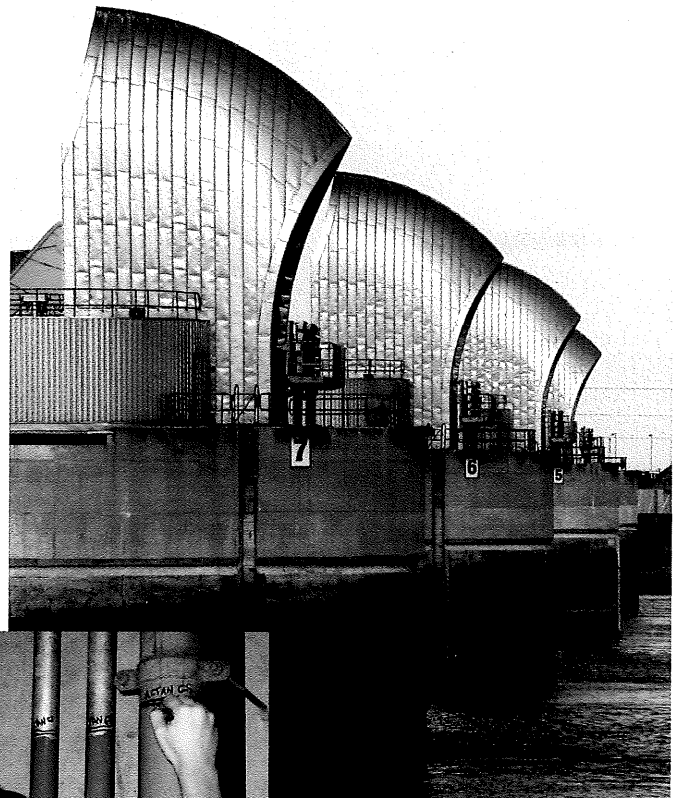
UK independent consultants, the Steel Protection Consultancy (SPC) has carried out extensive field trials of Actan GS primer at the Thames Barrier. The project took place over nine months in conjunction with The Environment Agency – Thames Barrier, which is responsible for the structure.

## THE CHALLENGE

From thousands of metres of galvanized steelwork under the Thames Barrier, two sections of 4in and 2.5in (100mm and 63.5mm) diameter, 18 year old pipework in the fire protection drainage system were selected as suitably tough test areas.

Located in cold, damp, and tunnel like spaces, they incorporated two types of galvanized surfaces – both with excessive zinc salt formation and where the original zinc spangle was still present. Parts of some pipes were also difficult to access as they backed on to a wall.

Traditional methods of treating these pipes were not suitable. Blasting is not practical for pipes in-situ. Many surface treatments contain solvents that present a fire risk in enclosed confines and tend not to be successful on both new and weathered galvanizing.



**FIELD TESTS: Actan GS primer being applied to pipework in one of the tunnels beneath the Thames Barrier. The product underwent detailed testing over 18 months.**

The larger diameter pipe had significant signs of zinc salts and zinc corrosion products and was abraded and wet wiped to show bright metal with a roughened zinc surface. Extensive zinc corrosion products remained but these were adherent to zinc base metal on the surface. On the smaller pipes where the galvanizing was in good condition, preparation was simply dry bristle brushing and degreasing with a standard commercial degreaser.

## THE SOLUTION

Actan GS requires only minimal hand preparation and performs equally well on new and weathered galvanizing. Operatives applied Actan GS by brush. Because it is water based and does not give off any harmful fumes the health and safety risk was minimal, even in the confined space.

To clearly show the contrast between substrate and the primer coat, the primer was pigmented green.

Overcoating time of Actan GS is not critical. In trials, one third was left without a top coat. After four hours, one third was overcoated with water based Actan T38 in white. The final third was vinyl coated using a leading brand.

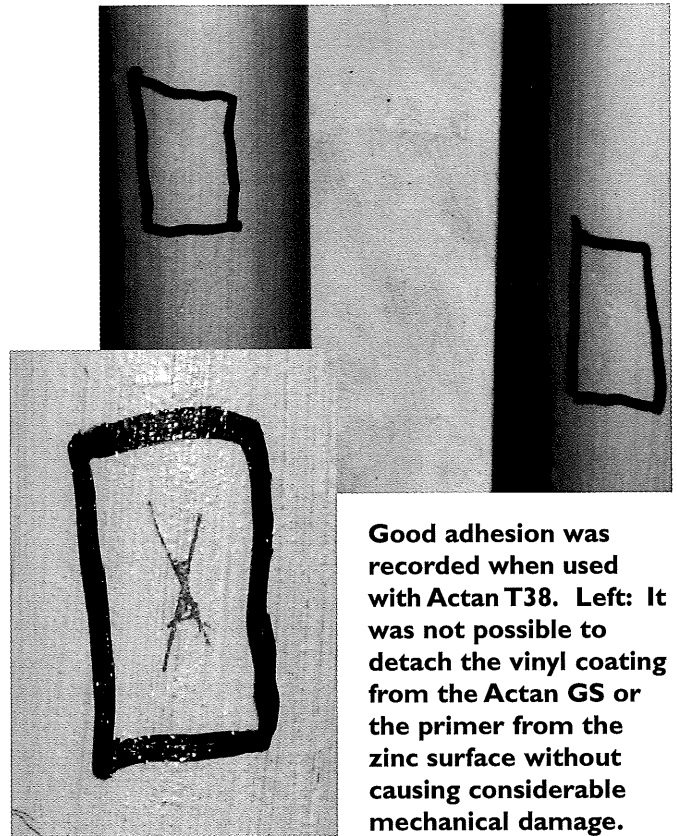
David Deacon of independent consultants SPC says: "Actan GS was quick and easy to apply, despite some awkward areas on the back of pipes. We know from other trials how significant labour savings can be by using Actan GS."

Consultants from SPC visually and micro-destructively examined the test areas for hardness, adhesion, blistering, flaking and detachment three, nine and 18 months after coating.

## OUTSTANDING RESULTS

"These results showed just how well Actan GS was working," says David Deacon. "At three months the results were very good, but after nine and 18 months, St Andrew's cross cut testing showed that adhesion had further improved.

"It is clear that improvement in hardness, adhesion and general properties had occurred with no evidence of blistering, loss of adhesion, flaking or detachment. Micro-destructive testing of the Actan GS/vinyl coating



Good adhesion was recorded when used with Actan T38. Left: It was not possible to detach the vinyl coating from the Actan GS or the primer from the zinc surface without causing considerable mechanical damage.

combination found the adhesion properties of Actan GS made it impossible to detach the vinyl coating from the product or Actan from the zinc surface, without causing considerable mechanical damage using a pointed scalpel knife blade.

Following extensive testing, SPC recommended Actan GS as an ideal primer to provide required protection for both new and oxidised zinc surfaces to the Environment Agency – Thames Barrier, with a choice of topcoats.

The Environment Agency – Thames Barrier followed this recommendation and has undertaken to use Actan GS overcoated with Actan T38 water based top coat, on approximately 80 waste pipes situated at the bottom of tunnels and running underneath all nine piers of the Thames Barrier.

Jan Colbe, mechanical, maintenance and operations manager for the Environmental Agency – Thames Barrier, explains: "The Actan GS/T38 combination provided an environmentally friendlier low VOC system that is much safer in the confined spaces on this project and still provides the required level of protection."

SPC is also currently carrying out trials of Actan GS with other UK Government departments, including the Highways Agency.

## Actan GS™ TECHNICAL DATA

### FUNCTIONS

- Primer for superior adhesion. Works as adhesion primer, ensuring the adhesion of coatings on difficult surfaces.
- Adhesion promoter for sealants and putties.
- Perfect bond with the surface. Forms a film which is transparent (opaque on request), hard, flexible, impact resistant and non-porous.

### APPLICATION

- Surface: hot dip or electro-galvanized steel, aluminium, copper, bronze, stainless steel
- Preparation: remove dirt, grease, oil and ensure surface is clean and dry
- Application: by brush or spray without dilution
- Recommended dry film thickness: 25 microns
- Recommended operating conditions for conventional air spray application: pressure 3-4 bar/fluid tip mm 1.3-1.5
- Recommended overcoating time: overcoatable after 1.5-2 hours depending on ambient conditions. All types of paints can be applied on top of Actan GS (alkyd paints are not recommended on zinc)
- Cleaning of tools: water
- VOC level: less than 0.1g/litre
- Set to touch: 15 mn, dry to handle 20 mn
- Storage: protect from freezing and away from direct sunlight

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