

UK DIARY

SEPTEMBER

- 14: Sustainable remedial treatment technologies – stabilisation and solidification. Contact: CIRIA, Tel: 020 7549 3300
- 15: CoastNET conference in association with CIRIA. Offshore development – new frontiers of opportunity. Contact: CIRIA, Tel: 020 7549 3300
- 15: 25th Cement and Concrete Science Conference. Royal Holloway College, London. Contact: e-mail: r.j.mangabhai@btinternet.com
- 22: Land contamination – managing potential legal liability. Contact: CIRIA, Tel: 020 7549 3300

OCTOBER

- 1: Annual Dinner at The Moat House – Cheshire. Contact: Myles Murphy, Tel: 0151 422 4112
- 11: Go Karting at Speedkarting, Warrington – North West. Contact: Margaret Williams, Tel: 0161 643 9171

NOVEMBER

- 7: 7th International Symposium on FRP reinforcement for concrete structures – North West. Contact: Margaret Williams, Tel: 0161 643 9171

READERS' LETTERS

To the Editor,

I am passing on some comments from Stuart Anderson, Director, Dry Treat, Australia with regard to the article entitled 'An approved alternative to silane' published in the February 2005 issue of *CONCRETE* magazine.

Dry Treat has supplied specialist silanes for over 15 years and is now supplying silanes to the UK. The article implies that all silanes are 'highly toxic'. This is not the case with Dry Treat products, which are based on ethanol and not methanol technology and are much safer than silanes of old.

For safety reasons, the use of ethanol-only liberating silanes is to be encouraged. This includes the use of isobutyltriethoxysilane, which is classified as non-dangerous. This silane has the added advantage of being relatively slow to react thereby allowing greater depth of penetration into the substrate and so better protection of the treatment against weathering. In the case of high wind areas, the use of solid silane in the form of a cream can be employed. This material is solvent-free and non-drip.

Quality control on the application of silane is relatively easy. A small core is taken at random every 300m² and is dipped into a water-based dye. The dye will not absorb into silane-affected concrete and hence the depth of impregnation (which should be greater than 3mm) can be measured in all cases. Silane-treated concrete is up to 100 times more resistant to chloride ion ingress compared with untreated concrete.

In conclusion, the data produced does not support the claim that Pavix CCC100 is a suitable alternative to silane, especially ethanol-based silanes. The use of silanes extends over 40 years and professional engineers should continue to specify products that have an extensive and successful worldwide track record.

*Jim Noone,
UK Analytical Ltd*

Author's response:

To the Editor,

Mainly because of low costs, the majority of hydrophobic impregnation is still done using solvent-based silane. While it is unrealistic

to expect construction products to be 'peaches and crème', my interest focuses on low-risk materials like Pavix.

For this reason, I ask the respondents to refer to the material safety data sheet (MSDS) for Dry Treat 40SK. In short, the attention-grabbing key words include pneumonitis, dermatitis, lung damage and central nervous system disorders. With Dry Treat 100N we note that 'Prolonged overexposure to ethanol has caused human birth defects'. While isobutyltriethoxysilane is clearly less hazardous than conventional silane, the MSDS advises that inhalation of mist may affect the blood, liver and kidneys. Here, my concerns lie with construction workers who spend long periods applying products that carry a real risk through prolonged exposure.

Pavix CCC100-impregnated concrete has been tested extensively for freeze/thaw loading under several testing Standards. These give an objective measure of performance, which should be applied to relevant products. On its own, depth of penetration is a meaningless parameter. For obvious reasons, I support the BD43 view that impregnation work should not be done in high wind conditions.

Core testing is very expensive. At current prices for 300m², it could cost more than the impregnation work. I cannot see this catching on. Certified training within a strictly controlled, approved applicator scheme is the best quality provision. I note that this is a particular strength in the supply of Pavix. By contrast, I have personally witnessed silane being applied in the rain and also instances of significant under-dosing. The latter occurs because the first coat tends to refuse the second coat on dense concrete. Perhaps this partially answers the riddle of why silane treatment has failed to protect some of the highway structures that are seen deteriorating on our motorways.

I shall be happy to supply data on the numerous tests that have been conducted on Pavix impregnation. This includes testing to American, Czech Republic, Russian, British and European Standards. Resistance to chloride penetration has been confirmed in this. Pavix is an innovative and worker-safe product that merits consideration as an alternative to silane. Apart from costs, there are many aspects to performance that cannot be covered here. I suggest the engineers and specifiers of products are capable of making their own decisions in the selection of products.

*Denis Chamberlain
City University, London*

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