

## TRACK TESTING OF ADHESION MODIFYING FLUIDS

This report examines the effectiveness of proprietary adhesion enhancing solutions in improving wheel/rail adhesion.

Previous studies into the effectiveness of trackside applicators containing a variety of fluids were considered to be limited for a number of reasons:

- The large distance between individual measurements of adhesion made by the train (about 26.6 metres at the time of these early tests) so that even assuming that the fluid is carried a reasonable distance along the track, only a few measurements could be considered.
- The high ambient adhesion when most of the tests were carried out, so that no trial of the effect of the fluids on poor adhesion was possible.
- With certain fluids, the devices were switched off immediately before the tribometer train passed over (as normally the track is not sprayed until after the locomotive wheels have gone over the device), to enable measurements on dry track of conditioning caused by several days application of the fluid. Yet, due to difficulties in maintaining several devices on a long route, the functioning of any one route for 48 hours prior to testing could not be guaranteed.

It was therefore decided to use the tribometer train to gain information more rapidly about the effect on adhesion of fluids that had already shown promise. The fluids were applied to the rails between the measuring axles of the COV AB tribometer van, thus enabling a measure of adhesion to be made before and after treatment in one pass. However it was realised this would not show up the long term conditioning effects claimed for some of the fluids. The fluids tested had at some stage given evidence of being capable of increasing adhesion.

The report concludes that the only fluids showing promise of improving adhesion were Ludox and Syton, and that these would seem the only ones worth using in the applicators. Since Portec solution and ethyl caprylate can produce very low adhesion the report questions the wisdom of using such materials in trackside applicators.