

Alcohol soluble inorganic compounds, *e.g.* sodium chloride, migrated with the solvent front and likewise did not interfere. The compounds listed in Table I were found to have R_F values between 0 and 1 but the majority did not cause difficulties because either they were not visualised by the chromogenic reagent when present in the proportions at which they are normally found in detergent formulations or their R_F values were different from those of the hydrotropes.

Glycerol, urea and EDTA could be mistaken for sodium benzenesulphonate (SBS) but since SBS finds little or no use in detergent formulations this is not critical.

It was possible to detect as little as 1% hydrotrope in ABS though at such low concentrations larger samples were required and as a consequence the R_F values changed marginally. Any difficulties experienced in identifying hydrotropes because of such changes in the R_F values could be easily overcome by preparing new standards in which the concentration of the hydrotrope matches that in the unknown more closely.

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The thin-layer chromatographic separation of some B-trichloroborazines

The use of gas-liquid chromatography for the separation of some unsymmetrical N-alkylborazines has been reported by PHILLIPS, POWEL AND SEMLYEN¹. This paper describes a suitable solvent for the separation and detection of some B-trichloroborazines using microcrystalline cellulose coated on glass plates. The B-trichloroborazines were prepared by the usual procedure^{2,3}. The use of microcrystalline cellulose as an adsorbent has only recently been reported^{4,5}.

Experimental and results

Preparation of the plates. The adsorbent was prepared by blending 50 g of microcrystalline cellulose (Avicel Sales Division of American Viscose Division, FMC Corp., Marcus Hook, Pa.) and 210 ml of water in a Waring blender for 25 sec at low speed and 7.0 sec at high speed. The mixture was spread on 20 × 5 cm glass plates at a thickness of 0.5 mm. The plates were allowed to air dry overnight and then were stored in a desiccator over sodium hydroxide until ready for use.

Sample application and development. Various mixtures of $B_3Cl_3N_3H_3$, $B_3Cl_3N_3-(CH_3)_3$ and $B_3Cl_3N_3(C_6H_5)_3$ were dissolved in chlorobenzene and spotted on the prepared plates. The plates were developed in either an ethyl acetate-pyridine system (1000:1) or in ethyl acetate. The developed plates were vacuum dried for 20 min.

Detection. A tincture of curcuma (yellow curcumin, tumeric or diferyloyl-methane) was prepared by boiling 4 g of curcuma in 10 ml of 95% ethanol. After

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filtering, the extract was diluted to 10 ml with distilled water. 5 ml of this solution was diluted to 100 ml with mixture of 95 % ethanol-water (1:1). The developed plates were first sprayed with 6 N HCl and then with the tincture of curcuma. The plates were then heated on a large hot plate at 80°. The tincture of curcuma changes to a red-brown spot on a yellow background in the presence of boron.

Other solvent systems consisting of various mixtures of pyridine, ethyl acetate, chlorobenzene, carbon tetrachloride, benzene and butylacetate were not effective in developing the chloroborazines spotted on a adsorbent of microcrystalline cellulose on glass plate. A typical thin layer chromatogram for chloroborazines developed in ethyl acetate gave R_F values shown in Table I.

TABLE I
 R_F VALUES OF B-TRICHLOROBORAZINES

Compounds	R_F values
$B_3Cl_3N_3H_3$	0.13
$B_3Cl_3N_3(CH_3)_3$	0.32
$B_3Cl_3N_3(C_6H_5)_3$	0.97

The method described is simple and can easily be carried out. We have found it applicable in the control of the synthesis of chloroborazines.

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