

Solutions

2.1 It melts over a range of temperatures, not sharply.

2.2 Any two of: fuels, cleaning agents, paints, medicines, alloys, fertilisers, foods.

2.3 The mobile phase – the solvent moving up the paper.

3.1 A pure substance melts completely at a single sharp temperature; an impure substance begins melting lower and over a range; so a measured melting range indicates impurity – or purity if sharp at the literature value.

3.2 A spot of ink is placed on the start line on paper; the paper's lower edge dips into solvent below the line; solvent rises, carrying the dyes; each dye distributes between the moving solvent and the stationary water bound to the paper; dyes that attach more strongly to the paper travel less far, so the dyes separate into spots at different heights.

3.3 Two spots in one run show dye X is a mixture of at least two substances; one spot in a single solvent does not prove purity – two substances could move together; one spot in every solvent tested shows a pure compound.