Summary:
Phase equilibrium characteristics of heavy hydrocarbon and furfural systems are required for studying furfural extraction of lube stocks.

Straight run vacuum distillates or lube stock range petroleum fluids may be conveniently represented as mixtures of several continuous components - that is as a mixture ensembles. The ensembles are distinguished by the number and configuration of aromatic rings present and the composition of each ensemble may be described by a piece wise continuous second degree polynomial. Investigation of solubility of heavy hydrocarbons in furfural shows that paraffins and napthenes have very similar solubilities and need not be differentiated.

The miscibilities of paraffins and furfural are affected by the presence of aromatics with long paraffinic side chains, which increase mutual solubilities. Aromatic with larger side chain cause more pronounced effect.

The continuous component method has also been compared with the pseudocomponent method, using multistage cross current extraction of a hypothetical lube stock. The comparison shows that the pseudocomponent method may produce wide variations in results, the choice of representative components often being very critical. Also no choice of pseudocomponent seems to emulate the behaviour closely in all respects. It is safer to use continuous thermodynamics, particularly if the region of operation comes close to the plait point.