

EFFECTS OF SOLVENT HYDROGEN CONTENT IN THE SRC PROCESS. Ronald W. Skinner and Edwin N. Givens, Corporate Research and Development Department, Air Products and Chemicals, Inc., P. O. Box 538, Allentown, PA 18105.

Five coal-derived solvents containing between 6.2 and 9.5% hydrogen were compared as once-through SRC process solvents in a continuous flow unit equipped with a stirred tank reactor (CSTR). Gaseous hydrogen consumption varied inversely with the solvent hydrogen content. Coal conversion to pyridine soluble products was insensitive to solvent hydrogen; but the yield of toluene solubles decreased significantly with hydrogen-deficient solvents. The yields of liquid products and hydrocarbon gases were also reduced with hydrogen-deficient solvent. The approach to solvent equilibrium was examined in solvent recycle experiments using 8.7% H and 6.2% H starting solvents. After five passes, the recovered solvents had not reached equilibrium, as determined by differences in hydrogen content, fraction aromatic hydrogen, and average ring number. However, these differences in solvent composition did not affect the product yields.