

SOLVENT EFFECTS IN EXXON DONOR SOLVENT COAL LIQUEFACTION. P. Maa, K. L. Trachte, and R. Williams. Exxon Research & Engineering Co., P.O. Box 45, Linden NJ 07036. Exxon Research & Engineering Co., P.O. Box 4265, Baytown TX 77520.

The Exxon Donor Solvent (EDS) coal liquefaction process utilizes a wide range of coal ranks, from lignitic to bituminous, and produces a variety of liquid product slates under moderate processing conditions. The recycle of hydrogenated, coal derived solvent is a key to the performance of the EDS Process.

The role of the recycle solvent in EDS is to provide a convenient vehicle for transporting coal into the process, to disperse the coal, and to donate hydrogen to free radicals produced by the thermal rupture of chemical bonds. The hydrogen donating capability of the recycle solvent allows a balanced utilization of both donor as well as molecular hydrogen under moderate processing conditions. In addition, through solvent conversion in the liquefaction reactor, product selectivity can be controlled to provide either predominantly naphtha or distillate product slates.

Liquefaction studies have been conducted in small batch autoclaves and integrated pilot units in order to better understand solvent-coal interactions in the EDS Process. Results of these studies will be discussed in this paper.