

CLASSIFICATION OF VOLATILE PRODUCTS OF TEMPERATURE-PROGRAMMED CO-PYROLYSIS OF TURKISH SOMA LIGNITE AND GÖYÜNÜK OIL SHALE

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Temperature-programmed co-pyrolysis of Turkish Soma lignites and Göynük oil shale was investigated with the aim to determine volatile product distribution and product evolution rate of their co-processing. A fixed-bed reactor was used to pyrolyse small samples of lignite and oil shale mixture under an inert gas (argon) flow as well as special sampling technique for collecting organic products formed at different temperature and time intervals. The co-pyrolysis products were analyzed by capillary gas chromatography and the total product evolution rate was investigated as a function of temperature and time. n-Paraffins and 1-olefins in aliphatic fraction of pyrolysis products were classified by their carbon number. In addition, the recovery of total organic carbon as an organic volatile product was determined. The effect of co-processing was determined by calculating the difference between the experimental and the hypothetical mean value of conversion of total organic carbon into volatile products. Conversion of organic carbon into volatile hydrocarbons increased while the amount of carbon in solid residue decreased with increasing oil shale ratio in the lignite-shale system.