Abstracts of Acta Montana, ser. B, No. 6 (101), Prague 1996

| Černý J., Šebor G., Maxa D., Sýkorová I., Weishauptová Z., Blažek J. | Influence of Coal Properties on Coprocessing of Coal/Oil Mixtures | 5 |

Abstract

Autoclave experiments with North Bohemian coals were done in order to evaluate their reactivity in coprocessing with petroleum vacuum residue. Selected coals were comprehensively characterized by using a number of analytical methods. While the coals were of similar geological origin, some of their characteristics largely differed from one coal to another. Despite the differences in physical and chemical structure, the coals provided very similar yields of desired reaction products. The yields of a heavy non-distillable fraction and/or an insoluble solid residue were largely affected by retrogressive reactions (coking) occurring under experimental conditions. The insoluble solid fractions were examined microscopically under polarized light.

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Abstract

Coprocessing of coal and petroleum vacuum residue was done at different temperatures and coal concentrations to optimize reaction condition of the process. While coal conversions steadily increased over the temperature range 410 °C to 455 °C, yield of distillates passed a maximum at 440 °C. However, reaction product obtained at this temperature contained an increased amount of insoluble material, which was formed by coking and others retrogressive reactions. Coal concentration higher than 33 % caused a decrease in the yield of distillable products, and the coal conversion to distillates was also smaller.

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Abstract

The purpose of this study was the characterization of possible modes of packing small-sized granular materials as well as derivation of correlations between the bulk density and grain fractions for such materials. In order to simplify otherwise complex systems, the granular material was treated as composed of two fractions only, i.e. coarse grains and fine grains (fines). However, it is plausible to extend the procedure to include larger number of fractions. The basic, initial assumption employed here had its origin in a model of coarse grains fixed starting geometry and five potential ways of filing empty spaces between the coarse grains with fines. The resulting equations for bulk densities were analytically derived from changes of effectively packed volumes with appropriate additions of the fines.

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Abstract
Chromatographic and mass spectrometric methods have been used to investigate the composition of the products obtained by extraction and thermal steam destruction (300 and 500 °C) at atm. pressure before and after extraction with MeOH/Bz (1:3) of lignite from Maritza--Iztok deposit (Bulgaria). Nine classes of compounds were found both in extractables and products obtained under conditions of mild steam pyrolysis (300 °C): Z(+2)[n-paraffins, isoprenoids]; Z(0) [substituted cyclohexanes]; Z(-4) [tricyclic terpanes]; Z(-6) [tetracyclic triterpanes, alkylbenzenes]; Z(-8) [tetralin derivates]; Z(-10) benzene-dicycloparaffins]; Z(-12) [substituted naphtalenes, cadalene]; Z(-14) [dibenzocyclohexanes]; Z(-18) [tricyclic aromatic compounds]. The influence of treatment temperature on the composition of the products has also been investigated.

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Abstract
The aim of the work was to evaluate tensides influence on coal bed moisture at dewatering in gravitational field. Experimentally was investigated hard coal bed with size 0.5 to 3 mm and tree different tensides. From the results can be assumed, that using of the tensides have no substantial effect on moisture in the dewatering bed but it is possible to reduce non-dewaterized bed height. Using tensides for reducing residual moisture in dewatering bins with high coal bed will not be efficient. Larger effect can be expected when dewatering on belts, where the ratio of bed height and its non-dewaterized part is larger.

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Abstract
The paper deals with dewatering of the bed of fine coals as a result of pressure difference and with air through-suction. The laboratory experiments conditions were similar to those used with dewatering by vacuum filtration on the drum rotary filters. Dewatering rate was generalized on base of rate of liquid flow through the bed, which can be described by Darcy's law. Thus it is possible to compare kinetics of dewatering with various hydrodynamic conditions. Roughly the effect of tenside addition to the dewatering kinetics was investigated.

Černý J., Pavlíková H.	Effect of Coalification of Bituminous Coals on the Composition of Coal Tars	69

Abstract

The title effect was investigated by a comprehensive fractionation and characterization of tars derived from four bituminous coals. The tar fractions obtained were grouped into three compound-classes, i.e. volatiles and mainly aliphatic coal fragments, two- and higher ring aromatics, and polar compounds. The main changes in the composition of the tars were observed in the proportions of the first two classes. With increasing coalification degree of the parent coal, the amount of volatiles and highly aliphatic fragments in tars decreased and, in turn, the amount of two- and higher ring aromatics increased. These aromatics were proposed to create the aromatic skeleton of basic structural units of coal macromolecular network. The amount of polar compounds in tars was found independent of coalification degree of parent coal.

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Abstract

Emission of CO_2 from burning of fossil fuels represent the most signigicant contribution to the entire emission o greenhouse gases. Emissions of CO_2 are mostly established by multiplying the quantity of used fuel by the emission factor (CEF)of CO_2. CEF of Czech coals are calculated from heating values.

Markova K.I., Budinova T.K.	ESR Study of Coal Lithotype - on the Nature of ESR Signals of Coal Lithotype of Low Rank	95

Abstract

The presence, concentration, and nature of free radicals in several coal lithotypes of low rank with OI degree, obtain as a result of gelization (xylain- humovitrain), of fuzanization (semifusain-fusain) and of liptanization (liptain) have been investigated by electron spin resonance (ESR) spectrometry.