Ground Water Control by Active Carbon compost Silika Gel Cementing Barrier for Geothermal Wells

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Abstract

There is a great concern about surface water pollution with boron, radon (P,Ra) from deep saline seepage are prompting contamination control so that limit residual saline contaminants. The contamination rate changes to those based on seepage concentrations and wetness. Such contamination Zn, Fe, SO4 rates were so low that the oxidation recycling of residual contaminants was not a serious threat. Silika gel sorbent materials caged in active carbon composite cements may avoid at higher heat and deeper pressures for capturing gaseous and radio nuclide contaminations. Greater rate of P and Radon based contaminants and As, Pb require a critical precaution for deeper seepage such as residuals (low soluble contaminant contents) and soil stabilization with, active carbon composite cement as geo barrier in well construction to control deeper soluble salts solution seepage concentration. The field studies and bitumen silty sand mixtures were investigated for composite geo barrier. The field studies to evaluate the stability of heavy metal concentrations and salts were scarce. The initial objective of this study was to determine the effects of seepage flow to surface and groundwater from the geothermal well. Injected bore design model were studied. The optimized diagram of barrier construction and application was determined.

1. INTRODUCTION

Many studies have investigated the numerous advantages of adding pyrolysis oil to activated combustion systems (Kegl 2011). The presence of carbon dioxide in conventional systems improves soot settling, improves soot thickness, increases soot removal, improves removal of soot, reduces the impact of organic shock loadings, increases black carbon and oxygen concentration at the surface of soot carbon, increases removal, suppresses, improves, and reduces bulking(Neeft et al. 1997).

1.1. Factors Affecting Softening and Pyrolysis with Carbon

Effective carbonization processes depend on numerous factors including coal rank in carbonization, the volatile gaseous matter of coal such as presence of hydrogen, carbonyl gas and carbonization rate(Mendiara 2007) so stabilizing the desorption, the settings of optimal diffusion conditions including structure defects (nitrogen, phosphorus, sulfur, etc.), temperature, oxygen content of coal, etc. and optimization of carbon dioxide concentration ratios (Amal 2011, Amal 2010) added the adsorption–desorption balance, the residence time and the spatial distribution of molecules in coal pores among other factors determining the efficiency of carbonization. Guerrero et al. (2008) also included the carbon reactivity, the adsorption characteristics as factors affecting the rate and extent of carbonization much dependent on the site activation, its gas desorption properties and its porosity (Bell etal 2011). Carbonization is a prerequisite step for oil generation and soot formation from tyre waste, biomass wastes and coal.

Coal particle size

A major reason is that the retention time in fixed film processes is longer than in solid-gas processes. This allows more time to the carbonization for cracking to the desorbed persistent compounds. Furthermore, high rank coals allows an sufficient intimate contact between surface pores and gas atmosphere in the furnace due to more gas desorption (Kajitani etal. 2006)

Coal porosity

The porous structure of activated carbon is a factor that determines to a great extent both the rate and degree of carbonization (Shadle et al., 2001). Sharma et al. (2008) found that, a mesoporous coal was more efficiently carbonized than a microporous coal.

Phenol molecules that may undergo an oxidative coupling reaction may be irreversibly adsorbed on coal, which in turn may result in low carbonization efficiency. Phenoxy radicals formed by the removal of a hydrogen atom from each phenolic molecule can participate in direct coupling with other phenoxy radicals at even room temperature, coal surface serving as a catalyst.

Carbonization efficiencies exceeding the total desorption abilities during increased fast pyrolysis on coal and wood were also reported by Tosun (2013).

Surface properties of coal - Reactivity

(BET N_2) specific surface area, total surface activity, oxygen functional groups, total surface impurities, metal concentrations, dielectric value, free radical concentration and reactivity of coal were related to the carbonization activity. However, in some investigations, the pore size distribution of coal is also greatly to affect pyrolysis kinetics (Guerrero etal. 2005).

1.2. Pyrolysis Oil of Waste Tire, Wood and Biomass

Soot matter removal during BC treatments results from the combined effect of adsorption and degradation. The efficiency of the combined combustion–soot formation process is higher than expected for either soot formation or production alone. Black carbon (BC) provides an attachment surface for pollutants and protects them from shock loadings of toxic and inhibitory materials, whereas the black carbon. High inert gas processes using catalyst carbon as carrier for iron film attachment are efficient soot from ethylene. However, in catalytic systems the gas attachment to surface is less efficient than in iron film or in fluidized bed reactors using CO_2 and pellets as iron film carrier (Jess etal. 2009, Schurtz etal. 2009). This is because, in the latter, then retention time of solids is generally much higher than in black carbon processes, allowing more time for gas attachment to BC. On the other hand, in suspended growth systems, the use of BC is more advantageous than Granule BC since Powder BC systems provide a uniform distribution of solids with a minimum energy requirement for grinding.

In summary, in spite of the contradictory hypotheses, based on the available literature, it appears that pyrolysis of oil can occur when the condensate is removed from the liquid phase through carbonation activity either in low or high temperature processes. Certainly, a oil concentration gradient should establish for a continuing carbonation. Pyrolysis is extremely dependent on both carbonation and cracking hydrocarbons in coal. On the other hand, cracking reactions may increase the adsorbent of carbonyls. However, available data do not allow determining if the oil generation phenomenon depends solely on a mechanism involving absorption or if it also involves pore activities. Further work is required to support either one of these hypotheses.

Microwave Mixing of Asphalt mixtures

Considerable carbon and asphalt mixture production on tar pyrolysis is managed as seen in Figure 1.

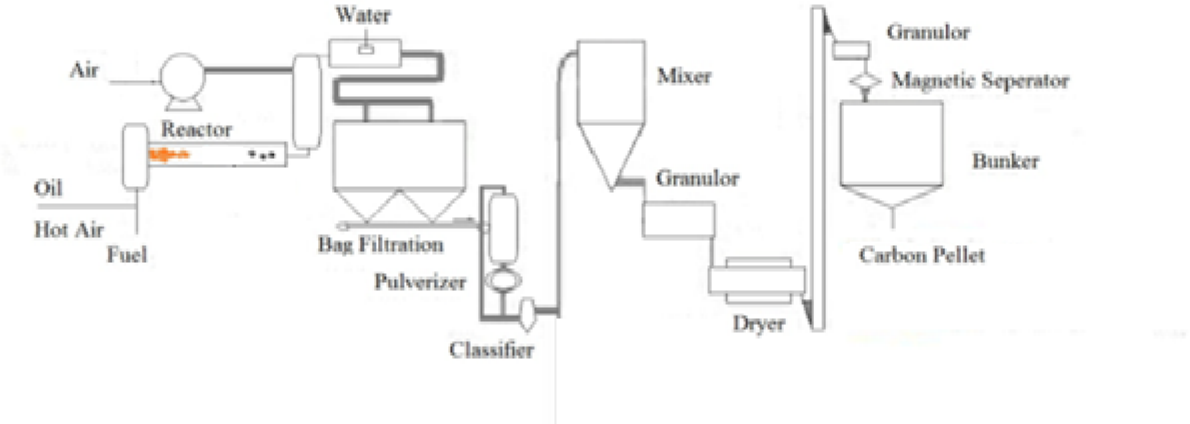

Figure 1. Use of fuel and pyrolysis oil subjected to Microwave Mixing of Asphalt mixtures production flowsheet

2. MATERIALS&METHOD

The representative samples were taken from local areas of the lignite. Fundamentally, the conditions regarding better desulfurization way, high quality lignite oil production, high value light oil, coal tar and gas products were determined at the goal of high fuel producing yield.

This study examined the high sulfur and ash types of Kütahya Gediz lignite, Soma lignite, Şırnak asphaltite and lignite by TGA analyzer as illustrated in Figure 2.

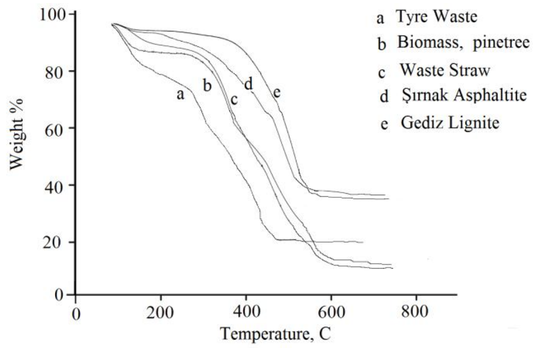

Figure. 2 Coal tar and Waste Tyre oil to Microwave Mixing of Asphalt mixtures

3. RESULTS

3.1. Mixture Preparation

Proximate analysis of studied Turkish lignites and Şırnak asphaltite and coal tar are found as given in Table 1. Studied coals and biomass, tire wastes carried out on slow pyrolysis and pyrolysis tar subjected to asphalt production in retort, as shown in Figure 3.

The country needs the cleanest fuel to be produced providing the essential oils and gases. For this reason, gasification of Kütahya Gediz, Soma lignite, Şırnak asphaltite and lignite may be so feasible at the side of cost and production high amount of gaseous fuels instead of importing natural gas.

Table 1,. Proximate Analysis of Turkish Lignite and Asphaltite. (ADB:Air dried base. DB:Dried base, DAB:Dried ashless base).

Coal Type	Ash,% ADB	Moisture,% ADB	TotalS,% DB	Volatile Matter,% DAB
Şırnak Asphaltite	6.3	0.1	5.7	52.6
Kütahya Gediz	26.0	11.7	4.6	42.7
Soma Lignite	13.8	14.0	2.2	40.4
Waste Wood	0.2	51.7	0.6	22.7
Waste Tyre	13.8	0.01	0.2	60.4

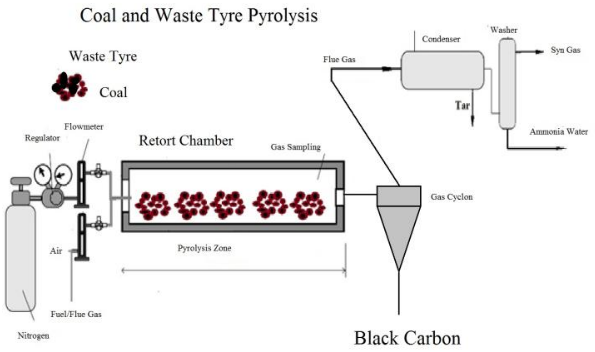

Figure 3 Pyrolysis of Coal tar to Microwave Mixing of Asphalt mixtures

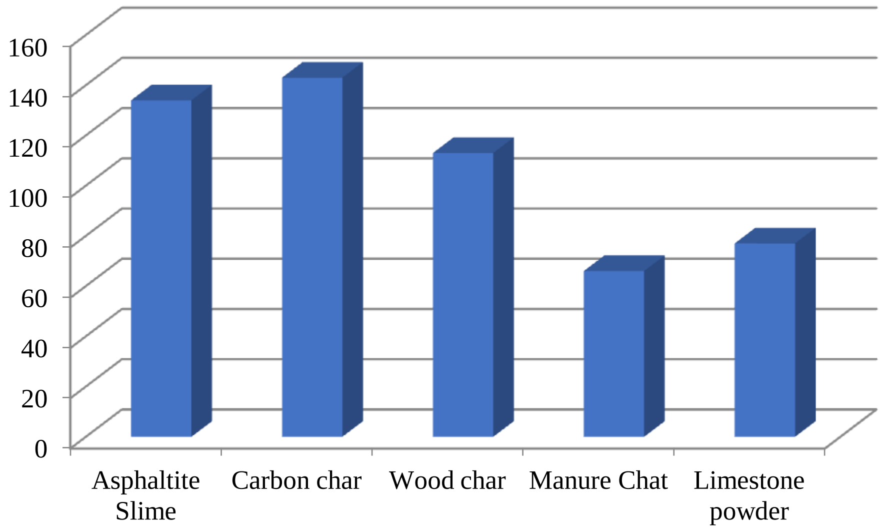

Figure 4. Asphalt Mixture Strength kg/cm2 by Microwave Mixing of Asphalt mixtures

3.2. Sorage to Coal Site Geotechnical properties

American Standard (ASTM 3080) experiments were carried out in the fill area. The specimens were tested to determine the geotechnical properties based on the representative masses in the study area, where the soundings of content are given in Table 1. S2, S3 and S4 fields of investigation were made in 2013. The micro pictures of used bottom ash-slag and volcanic cinder and punice are seen from Figure 3 and grain size distributions of the material used as bottom layer in the landfill are shown in Figure 3 and 4.Figure 2. The macro and micro images of Boiler slag, volcanic slag, Tatvan Pumice.

Geobottom layers by fly ash showed sufficient impermeable geolayer and it was over 10 mg/l, impermeable zone leaks controlled by local pool. The geolayer parameters were determined as geo contents as given in Table 1.

Table 2. The chemical composition values soil stabilization materials of Sirnak province boiler bottom slag, volcanic slag and Tatvan pumice

Component%	Şırnak boiler bottom ash-slag	Volcanic slag	Tatvan pumice	Şırnak Fly Ash
SiO2	43,48	50,50	60,13	41,48
Al2O3	16,10	14,61	17,22	18,10
Fe2O3	10,52	24,30	4,59	4,52
CaO	8,48	2,30	2,48	18,48
MgO	3,80	1,28	2,17	4,20
K2O	2,51	2,51	3,51	2,71
Na2O	1,35	1,35	4,35	1,95
Ign.Loss.	10,9	0,21	4,12	1,9
SO3	0,32	0,12	0,52	0,22

1. Geo5 Slope Stability

As well as natural ground is compressed according to the compression parameters slightly excavated again. In this case the stability of compacted soil parameters used in the analysis. Four separate samples taken from different points of the slope, cutting box test was carried out to determine the shear strength parameters. After the experiments were made c 'and ϕ' values ϭ were found. Stability as the slope shown in Figure 5 and rock layers and cracks shown in Figure 6 may also be evaluated in the program GEO5 programs. Partially after a designated envelope with water saturated soils breaking strength test conducted in nğn-drained conditions point the floor act as both cohesive and internal friction. Total stress analysis method, manner and will cover this criterion is to examine the stability of the rock mass is divided into a certain number of vertical slices. Bishop method is taken as the beginning of accepted slope limit equilibrium equations as if the balance is removed. Bishop serves with total stress instead of effective stress analysis. This method is further brought to the methods of Taylor and Fellenius (Görög and Török, 2006 Görög and Török, 2007, Anonymous, 2013, Anonymous, b 2009). Janbu Method can be used whether or not circular sliding surface for all types (Vaneckov et al., 2011, Prusa, 2009). Slope stability analysis of homogeneous splitters and circular shift occurring in filling slices for stability analysis of shifts in the non-circular more general types of interslice

Soil compaction of the mining wastes was also decreased the permeability of bottom layers in the mining field.

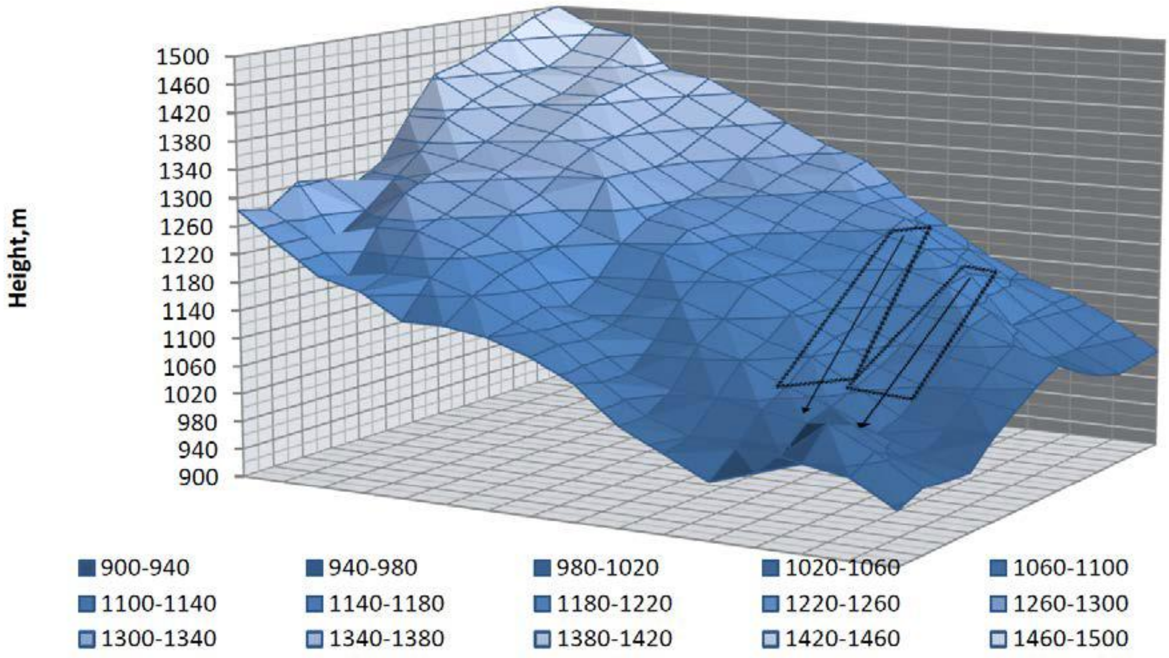

Figure 5.Drainage and stability of S2,S3 and S4 Investigation Field Possible landfill cross sections

4. Conclusions

Şırnak was investigated by urban areas close to border regions participating in the colliery waste heaps of soil samples taken from four different slopes of slope stability and geotechnical properties of the unit field studies and laboratory experiments. Of the slope stability calculations with risk maps and risk section of program GEO5 programs are discussed.

The weathering of rocks in the study area is weakening quickly change the height and tilt angle of the slopes to erosion and slope. Dissociation seen in rocks in the study area also offers a negative contribution to stability problems. The compression strength could be easily tested by indentation on the landfill as shown in Figure 8. The durability of the landfill bottom layer was tested easily on the chart of fly ash and lag mixture content as given in the Table 2.

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