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Activation of bentonite and application for reduction pH, color, organic substance, and Iron (Fe) in the peat water

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Abstract: Chemical composition of bentonite may undergo change if when given treatment with ion exchange or by activation. Activation that is often used is thermal activation and chemical activation, in this study used activator is 6% HCl. Bentonite is used as the sample obtained in five villages in the district. Sample preparation is done by the process of drying with sunlight and oven, then puree and add HCL at 6% for 10 hours, drained, washed with distilled water until pH> 6, dried in an oven at 120°C for 6 hours. Bentonite is already inactive characterization by means of XRD and SEM-EDS, then tested for its ability to reduce the parameters pH, color, Organic Matter, TDS and Fe in the peat water. Measurement parameters pH by using a pH meter, organic substance, color and iron (Fe) with a spectrophotometer method and gravimetric solute done. The results showed that the addition of bentonite which is activated as much as 3 ml gr/500 peat water can reduce the concentration of color 84.10%, 80.50% and the organic matter content of iron (Fe) up 79.25%, activation with HCl 6% parameter is significant in reducing water peat and bentonite are added the more the greater its ability to reduce peat water parameters. ANOVA results showed that the addition of bentonite did not affect the pH and TDS peat water well is not activated bentonite and activated on the real level $\lambda = 0.05$, this is because bentonite having a pH below 5.0 and dropped after activation with strong acids . The ability of bentonite to absorb organic substances, iron and water color on peat caused by bentonite has a layered structure, containing of silica and alumina, bentonite and colloidal power expands the strong and have cations that can be exchanged, which converge in mineneral monmorrilonit, kaolinite, quartz and cristobalit

Keywords: Bentonite, XRD, SEM-EDS, Activator, Water Peat

1. Background

Bentonite is a mineral that has been widely used as a catalyst for the industry, for bleancing earth, and can also be used to decrease to parameters of the peat water [1]. Bentonite has a different composition from one region to another, and depending on the age and type of soil. These differences lead to different treatment given depends on the usability of sal bentonite and bentonite itself.

Bentonite is a mineral silica [2], and expressed as hydrated aluminosilicate. According Gillsom (1960), 85% of bentonite consists of montrorillonit, while the other components are: beidellite, saponite, saponite and other minerals. Montrorillonit structure can undergo substitution of other metals among the lattice, such as substituting alumium and phosphorus replaces silicon metal in tetra hedral coordinates. , And metals, Fe, Mg, Zn, Ni, Li can replace the position of aluminum in the octahedral layer. In toritis montmorillonit chemical formula is (OH) $4Si_8AlO_2O.nH_2O$ (SiO_2 66%, Al_2O_3 28.3% and 5% H_2O [3]. Bentonite granules are fine and stable secondary product on the conditions in the Earth's surface, which formed in nature through four processes: weathering processes, process changes due to hydrothermal solutions, the process of transformation in rocks glass turf and deposition processes are chemically [2].

Characterization results of x ray diffraction (XRD) showed that the bentonite Jambi region composed of the mineral kaolinite, monmorrilonit, quartz and cristobalit. Monmorillonit that most mineral found in clay Biku Tanjung 72.3%, 69.8% and Rengas Island Pauh as much as 65.9%, with an average density of 2,193 g-1cm-1. Results of analysis by Scanning Electron Microskopy (SEM) and Energy Disvertive Spektroskopy (EDS), showed that the compound is the main constituent of bentonite SiO_2 and Al_2O_3, with an average content of 50.01% and 30.65% by weight. Bentonite can be used to reduce the effectiveness of color parameters with 65.60%, 35.89% of Fe and 59.1% of organic matter. To increase its effectiveness needs to be done the activation and combination with other materials such as activated carbon and calcite [1].

Water treatment technology is more developed lately Reverse osmosis technology is used to reduce levels of salt in the water [4]. This technology can produce clean water more and can be combined with other treatment systems [5]. Reverses osmoses is a technology that uses a semi-permeable membrane that allows the membrane to separate the components of microorganisms present in water and suitable for the environment [6].

Peat water can be treated with the addition of the use of Poly Aluminium Clorida (PAC) is able to reduce the intensity of the color of the peat water to 624 TCU 15 TCU [7]. Method "One Stage Coagulation" [8], the combination method Uplflow Anaerobic Filter (UAF) and the Slow Sand Filter (SSF) is able to reduce the concentration of the peat water color PtCo 804 to 11 PtCo [9], using aeration pump and filter from sand, model TP2AS 10] and [11], have successfully used bentonite to reduce Fe $^{+3}$ ion parameters and Cu $^{+2}$ ions on peat water river Siak Riau.

From the research Naswir [1] showed that the bentonite is not yet capable of lowering down the activated color content (65.60%), organic matter (59.1%), and 35.89% Fe. but no effect of paragraph towards the reduction of acidity (pH water) water peat. In general, bentonite has a layered structure with the ability to inflate (swelling) and have cations that can be exchanged. Bentonite adsorption capacity can be increased by activation, activation of both heat (heat activation) as well as activation of acid (acid activation) using a strong acid such as HCl, H_2SO_4, H_3PO_4, CH_3COOH or HNO_3 to produce Bentonite which have active sites with the adsorption capacity higher [12].

2. Experiment

2.1. Instrument and Materials

Materials required in this study are: Air peat, bentonite, distilled, HCl (pa), $KMnO_4$, (COOH) $2.2H_2O$, $(COONa)_2$. $2H_2O$ reagents Buffer pH 4 and pH 9, and pH 10, distilled, HNO_3 (pa), H_2O_2, H_3PO_4 (pa), K_2PtCl_6, $CoCl_2.6H_2O$, HNO_3 (pa), $FeCl_3.6H_2O$ (pa), H_2SO_4 (pa), KSCN (pa), whatman filter paper 42, sodium borohydride and distilled water. Tools used: sacks, UPS, oven, furnace, mortar and pestle, sieve 150 mess, stirrer, chemical glassware, analytical balance, beakers, filter paper, aluminum foil, sample bottles, electric heating, and burette. Instruments that are used are pH meter, TDS meter, Nesler tube, UVvis, X-Ray diffraction (XRD), Electron scanning Microskpoy (SEM) and Energy Dispertive Microskopy (EDS).

2.2. Sampling and Characterization of Bentonite

Bentonite samples taken at five locations in the regions and districts Sarolangun Merangin of Jambi Province, bentonite samples in Sarolangin taken in the village of Pandan Island, Pauh an Tanjung Rambei village, and in the district of Bangko Merangin taken in the village of Tanjung Biku and Rengas Island. Sampling was conducted in August and September 2012. Amount of bentonite samples taken approximately 50 kg stored in sacks in the form of chunks and shards shards

2.3. Bentonite Activation (Activation)

Bentonite as much as 5 kg dried with hot sun, then roasted at a temperature of 110^{o}C, then cooled in crushed into powder with a size of 150 mess. Activation is then performed with the addition of 6% HCl activator, and than to stirred and soaked for 4 hours, then washed with distilled water and filtered. Residue screening dried in an oven at a temperature of 110^o $^-$ 170^0 C for 4 hours, then dried and ground again. The resulting active bentonite divided by three, partly used to test the effectiveness in reducing of parameters in the peat water, again partly used for XRD and SEM characterization [13].

2.4. Bentonite Characterization by XRD and SEM

Bentonite characterization performed using XRD and SEM instrument-EDS. X-ray diffraction instrument, brand Philips Analytical PC-APD, Diffraction Diffractometer software type: PW1710 BASED, Tube anode: Cu Generator tension [kV]: 40, Generator current [mA]: 30, Wavelength Alpha1: 1.54060, Wavelength alpha2: 1.54439, Intensity ratio (alpha2/alpha1): 0.500, Divergence slit: 1o, Receiving slit: 0:45 and Type of scan: CONTINUOUS. Scanning Electron Microscopy SEM-EDS brand Instrument JEOL JSM 6510L A detail is used to observe the surface of cells or other microscopic structures, and observation and is capable of displaying three-dimensional objects. Scanning Electron Microscopy (SEM).

2.5. Manufacture of Reagents

Preparation of Standard Color 500 mg / L Pt-Co. 1,246 g and 1 g $CoCl_2.6H_2O$ K_2PtCl_6 dissolved in 1000 ml flask with aquabides and 100 ml of concentrated HCl and then diluted to mark boundaries. of a solution of 500 mg / L PtC0, made standart solution with a concentration of 0, 2.5, 5, 10, 25 mg / L Pt-Co.

Standard solution of 1000 ppm Fe. 0, 242 g $FeCl_3.6H_2O$ dissolved into 1000 ml flask and add 20 ml H_2SO_4, then diluted to mark boundaries, and than made a smaller concentration into 2, 4, 6, 8, 10 ppm

2.6. Peat Water Parameter Measurement

Organic substance of the Peat water to determined by using Permanganometri metode (SNI 06-6989.22-2004). Testing is done by way of taking 100 mL, examples input test into inside erlenmeyer 300 mL, and add 3 grains of stone Boiling, add the KMnO4 0,01 N a few drops kie within test example until happen color pink, add 6 ml sulfuric acid 4%. Then titration with 0.01 N KMnO4 to a pink color, note the use of the volume of KMnO4. Determination of pH in the peat water using potentiometric method (reference ASTM D 1293-95). Determination of color in the peat water by comparing the color of the test sample with a standard solution of color. The color is used as a raw material with a solution of platinum cobalt units PTCo scale. Working procedure of determining the color of water peat sample to be analyzed is filtered by the porous filter paper inserted into the 0.45 um and 50 mL Nessler tube and than can use to spectrophotometry (Uvvis). The method used for the determination of iron (Fe) in peat water to using of fenantrolin method by spectrophotometry tool. Principally boil water samples with acid and hydroxylamine which aims to transform iron into ferrous, then added 1.10 Fenatrolin at pH 3.2 -3.3.

3. Results and Discussion

3.1. Characterization of Bentonite

The results of characterization by X-Ray Diffraction bentonite showed that bentonite Jambi area generally composed of 4 types of minerals; kaolinite, montmorrilonit, quartz and cristobalit. Porsentase weight ratio of each mineral contained in it are shown in Table 1.

Table 1. *The Bentonite of composition before and after activation*

	% Weight Mineral											
The origin Bentonite	**Kaolinite**		**Quartz**		**Montmorillonit**		**Cristobalite**		**Density (g^1cm-3)**		**μ/dx mix (cm^2g^{-1})**	
	N.A	*AC*	*N.A*	*AC*	*N.A*	*AC*	*N.A*	*AC*	*N.A*	*AC*	*N.A*	*AC*
Biku Tanjung	10.3	9,0	4.0	8,0	65.9	53.3	19.7	20.7	2,210	2.268	25.0	41.9
Desa Pauh	39.0	38.1	4.0	7,6	56.2	54.4	-	-	2,087	2.106	22.4	22.8
Tanjung Rambai	21.6	36,1	18.2	7,9	52.8	47,9	8.1	8.1	2,114	2.145	24.1	23.3
Pulau Pandan	8,6	12.5	21.4	27.9	29.6	13.5	5.5	11.5	2,380	2,612	26.2	51,2
Pulau Rengas	7.6	8.5	2.0	3.0	75.3	46,9	15.4	20.5	2,174	2.312	23.4	24.8

Description: N.A = Non Activation, AC = Activation

From Table 1 above, it can be seen that the greatest composition of bentonite is mineral montmorrilonit and kaolonit. Mineral composition contained in the bentonite is not the same between Tanjung Biku bentonite, bentonite Pauh and other areas, the comparison contained in the mineral composition that has not been activated bentonite bentonite activated by HCL 6% may change the composition of the minerals in it. Changes in the composition of the constituent mineral bentonite is characterized by using X-Ray Diffraction, with the results.

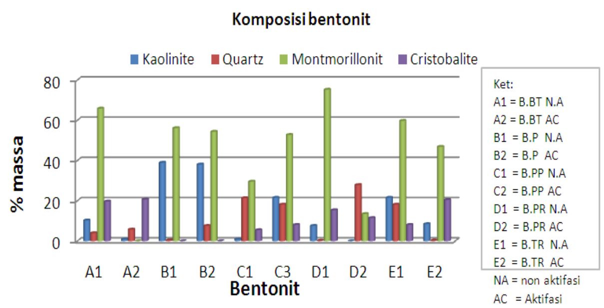

Fig 1. *Comparison of the composition of bentonite before and after activation with HCl 6%*

From the results of characterization by X-Ray Diffraction, which are summarized in Table 1 above, it changes the composition of bentonite, montmorrilonit content becomes smaller after activated, while the content of kaolonit becomes larger, as shown in Figure 1.

3.2. XRD Spectrum Bentonite is Already Activated

Constituent mineral composition of bentonite can be detected through x-ray spectrum, as shown diffaction spekrtum X-ray Diffraction several types of bentonite in the area of Jambi

XRD spectrum image above shows that bentonite Jambi area is a mixture of several minerals, among others; kaolinite, quartz, montmorillonite, and cristobalite. In the mineral bentonite montmorillonite is the most widely bentonite Rengas Island is 69.8% and 65.9% Biku Tanjung. Bentonite Jambi region possessed an average density of 2,193 g-1cm-1. Composition of some bentonite can be summarized in Table 1 above. The dominant mineral in bentonite is montmorillonite. Montmorrilonit is a mineral that contains compounds $Al_2O_34Si.H_2O$, other minerals contained in bentonite is sometimes Mg and Ca. Bentonite lattice structure composed of an Al_2O_3 plate located between the two plates SiO_2. Because of this structure can expand and contract montmorillonite and adsorption of water and power has higher cation

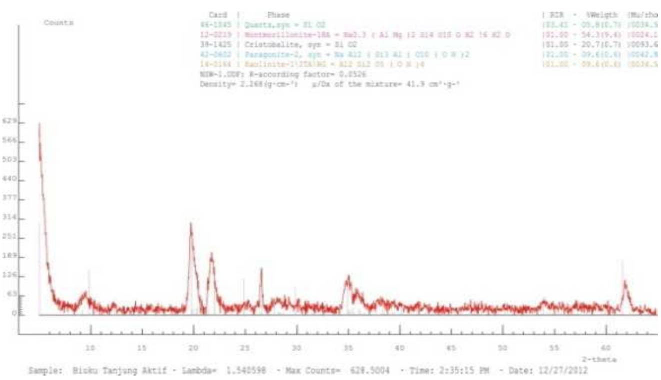

Fig 2. *Spectrum XRD of Bentonit Biku Tanjung*

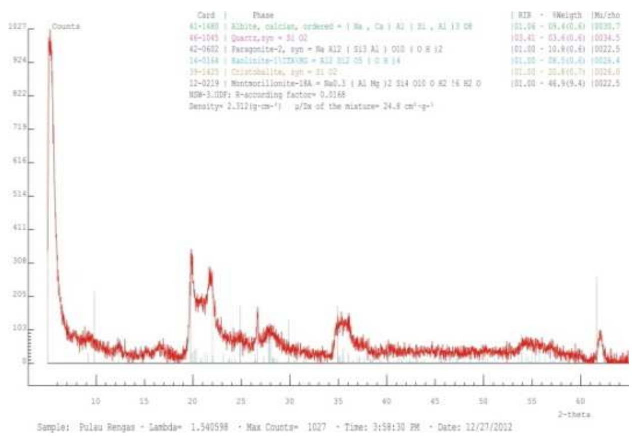

Fig 3. *Spectrum Bentonit Pulau Rengas*

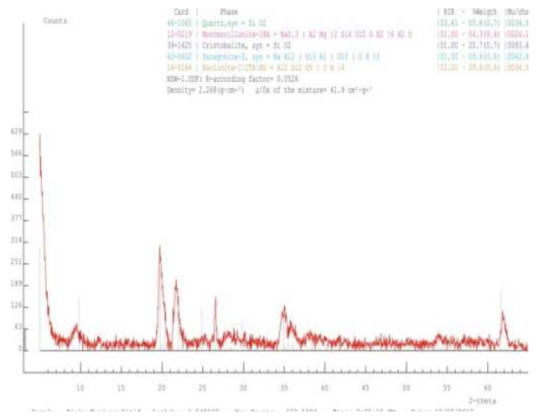

Fig 4. *Spectrum XRD of Bentonite Tanjung Rambei*

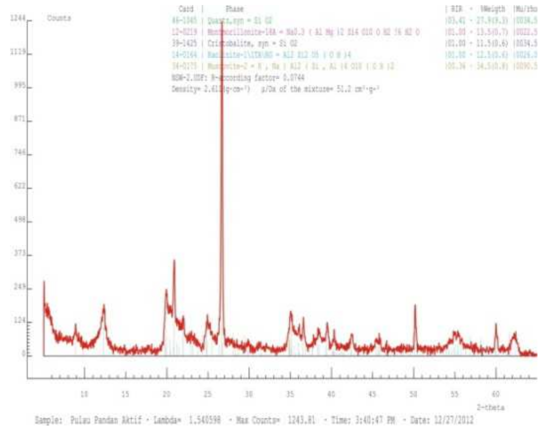

Fig 5. *Spectrum XRD of Bentonit Pulau Pandan*

3.3. Analysis of the results of SEM-EDS Some Type Bentonite

Results of analysis by Scanning Electron Microskopy (SEM) and Energy Disvertive Spektroskopy (EDS), showed that the bentonite is composed of several elements incorporated in the form of chemical compounds, as in Table 2 and 3.

Table 2. *The bentonit of composing elements area in Jambi*

No	Element	Sample of Bentonite				
		B.Tanjung %	Pauh %	P.Pandan %	P. Rengas %	Tj. Rambei%
1	C K	14.24	8.11	7.26	19.26	8.31
2	O	41.00	43.57	45.55	38.81	44.31
3	Na K	-	0.04	0.02	0.08	0.08
4	Mg K	0.11	0.19	0.78	0.87	0.08
5	Al K	17.09	16.48	10.70	9.92	20.79
6	Si K	20.62	23.80	29.99	24.60	21.65
7	Cl K	0.75	2.22	0.97	1,56	0.75
8	K K	0.04	0.62	0.15	0.11	0.09
9	Ti K	0.40	0.42	0.12	0.10	0.05
10	Ca K	0.00	-	0.07	0.01	0.05
11	Fe K	1.73	3.38	2.74	2.43	1.46
12	Cu K	3.08	1.19	1.66	2.25	2.42

Table 3. *The composition compounds of bentonite area in Jambi*

No	Compounds	Sample of Bentonite				
		B.Tanjung %	Pauh %	P.Pandan %	P. Rengas %	Tj. Rambei %
1	SiO_2	44.11	50.92	64.16	52.63	46.32
2	Al_2O_3	33.61	31.09	20.22	18.75	39.26
3	TiO_2	0.66	0.70	0.20	0.17	0.08
4	CaO	0.01	-	0.10	0.01	0.08
5	MgO	0.19	0.31	1.30	1.45	0.06
6	K_2O	0.04	0.75	0.18	0.13	0.11
7	Na_2O	-	0.06	0.03	0.11	0.11
9	FeO	2.22	4.35	3.53	3.13	1.88
10	CuO	3.85	1.49	2.07	2.82	3.03
11	C	14.24	8.11	7.26	19.26	8.31

3.4. Spectrum SEM-EDS of Bentonite

SEM image results showed that the surface of bentonite has a smooth shape and hollow and layered layered layered (as an example spektra of sampel Biku Tanjung and Rengas village) Fig.7 and Fig 8.

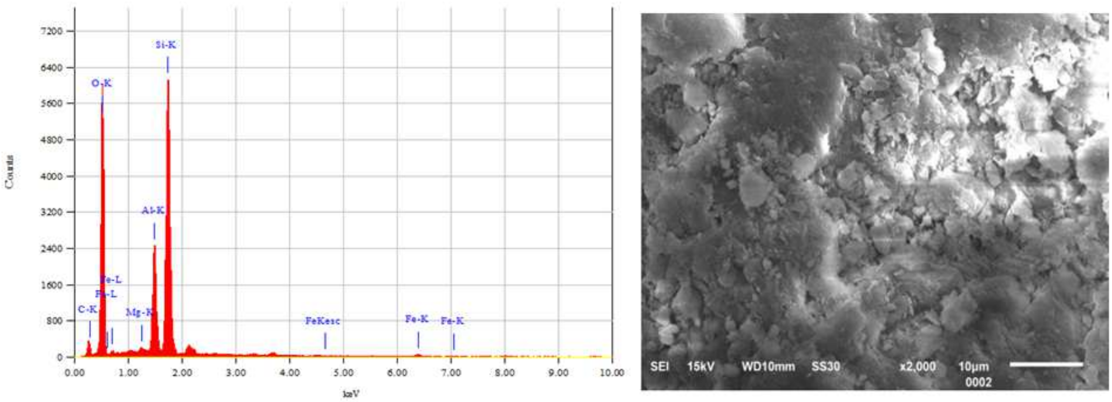

Fig 6. *SEM-EDS spectrum of Bentonite Biku Tanjung before activation*

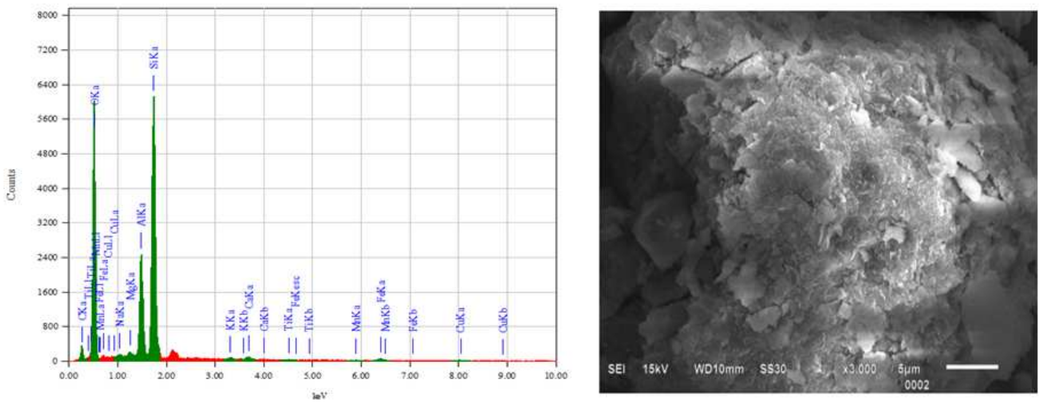

Fig 7. *SEM-EDS spectrum of Bentonite Biku Tanjung after akivation*

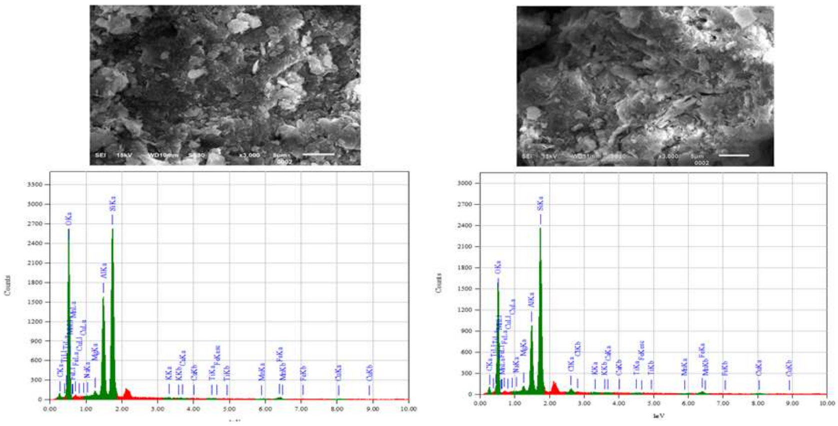

Fig 8. *SEM-EDS spectrum of Bentonite Pulau Rengas before and after activation*

Tabel 4. *The effect of adding non bentonite activated to the parameter in the peat water*

Weight of Bentonite (gr)	**pH**					
	BBT	**BP**	**BTR**	**BPP**	**BPR**	**X**
0	4,04	4,04	4,04	4,04	4,04	4,04
1	4,22	4,29	4,31	4,42	4,54	4,34
2	4,29	4,17	4,20	4,32	4,43	4,28
3	4,36	4,18	4,41	4,48	4,18	4,32
4	4,18	4,32	4,33	4,33	4,28	4,28
5	4,22	4,36	4,16	4,15	4,37	4,25
Wight of Bentonite (gr)	Color (PtCo)					
	BBT	BP	BTR	BPP	BPR	X
0	437,25	437,25	437,25	437,25	437,25	437,25
1	492,18	445,48	411,07	441,84	463,07	450,73
2	380,57	330,19	362,95	528,44	498,97	430,14
3	328,74	340,33	400,94	439,18	442,63	390,36
4	242,18	150,34	279,31	275,06	327,08	254,79
5	294,44	269,55	308,30	496,09	530,25	379,73
Weight of bentonite (gr)	Organic substances (mg/L)					
	BBT	BP	BTR	BPP	BPR	X
0	169,38	169,38	169,38	169,38	169,38	169,38
1	173,93	155,73	179,99	175,44	166,34	170,28
2	151,17	117,8	129,94	140,56	142,07	136,31
3	117,81	98,09	146,62	129,94	132,97	123,87
4	81,4	69,27	148,14	108,70	120,84	105,67
5	93,54	72,03	72,308	105,67	58,65	80,44
Weight of Bentonite (gr)	Fe (mg/L)					
	BBT	BP	BTR	BPP	BPR	X
0	1,089	1,089	1,089	1,089	1,089	1,089
1	1,121	1,221	1,159	1,359	1,228	1,218
2	1,073	0,872	0,875	1,529	0,945	1,059
3	1,073	0,952	1,146	1,677	0,947	1,159
4	0,856	0,661	0,974	1,085	1,082	0,932
5	0,835	0,807	0,860	1,656	1,196	1,071

3.4. The Effect of Bentonite Activated of Peat Water Parameters

In this study the effect of using bentonite seen either yet activated and that has been activated to the parameters of pH, color, organic matter and water content of peat Fe. Weight bentonite used is 1 to 5 g with a volume of 500 ml of water peat for each treatment. Each bentonite is given the same treatment. Results of parameter changes the pH, color, organic matter, and Fe in the peat water after the addition of bentonite can be seen in Table 4.

3.6. Effect of Bentonite Activated Additions to Paramters of Peat Water

In this study, activation is used is acid activation, which is activated by the addition of a strong acid, strong acid used is hydrochloric acid (HCl) 6%, the selection is based on research activators terdahu HCl, 6% HCL which gives better results compared with H_2SO_4 and HNO_3 [17] [18].

Once in the imposition of immersion for 3 hours with 6% HCl, washed with distilled water and then bentonite in the oven at 120°C for 6 hours. Once dried bentonite smoothed back by using a mortar and pestle. Bentonite used is already inactive weighing 1-5 grams, was added to the peat in 500 mL of water, then carried and deposited stirred for 60 minutes, filtered, the filtrate obtained analyzed the color content, organic matter, pH, and TDSnya. Color parameter measurement results, organic matter, pH, Fe and TDS in water after adding bentonite active, Table 5

Tabel 5. *The effect of adding bentonite activated to the parameter in the peat water*

Bentonite (gr)				**pH**		
	BBT	**B P**	**B TR**	**B PP**	**B PR**	**B PR**
0	3,82	5,85	3,82	3,82	3,82	3,62
1	4,30	5,85	6,30	5,50	5,6	3,74
2	4,30	6,30	6,30	5,40	5,50	3,74
3	4,30	6,00	6,30	5,40	5,50	3,77
4	4,40	5,80	6,30	5,40	5,50	3,82
5	4,40	5,20	6,20	5,40	5,40	3,83
Bentonite (gr)				Color (PtCo)		
	BBT	BP	BTR	BPP	BPR	BPR
0	837,16	837,16	837,16	837,16	837,16	837,16
1	259,45	235,856	106,46	191,87	65,87	183,00
2	388,12	195,572	108,08	185,57	124,40	176,19
3	277,11	141,912	48,94	145,93	90,02	96,21
4	165,68	81,372	14,88	36,30	110,01	74,44
5	128,57	45,371	22,26	20,14	28,26	27,79
Bentonite (gr)				Organic substance		
	BBT	BP	BTR	BPP	BPR	BPR
0	284,65	284,65	284,65	284,65	284,65	284,65
1	148,52	160,235	136,13	133,04	160,91	108,70
2	98,97	91,247	83,49	66,58	92,78	57,13
3	77,20	47,237	27,74	74,19	64,90	35,90
4	71,10	45,371	43,22	61,80	61,81	26,80
5	58,71	41,032	33,94	46,32	46,33	2,53
Bentonite (gr)				Fe (mg/L)		
	BBT	B P	B TR	B PP	B PR	B PR
0	1,749	1,749	1,749	1,749	1,749	1,749
1	0,465	0,7875	0,482	0,688	0,558	0,439
2	0,305	0,6937	0,425	0,572	0,385	0,322
3	0,279	0,5673	0,281	0,428	0,358	0,263
4	0,295	0,5572	0,329	0,489	0,339	0,296
5	0,338	0,493	0,337	0,490	0,353	0,280

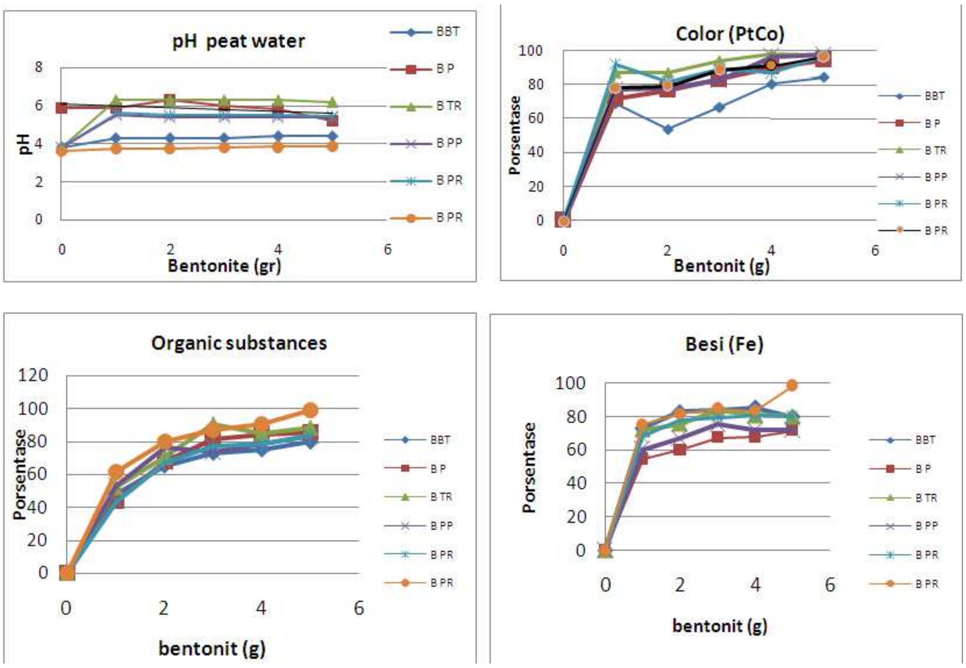

Fig 9. *Changes of organic substances after addition of bentonite active*

To see the connection and relationship between the amount of bentonite is added to the peat water parameters pH, color, organic matter, Fe and TDS, it can be made in the curves in Figure 12.

From the analysis in the table above were fixing ability of bentonite in pH, color, Fe and organic matter peat water is relatively varied. The addition of bentonite did not affect water pH soils, but good enough in reducing the color content (65.60%), organic matter (59.1%), and 35.89% Fe. The ability to absorb organic bentonite, Fe and colors on the water because of the nature of the peat due to the strong colloid, and expands when mixed with water and can adsorb various substances dissolved in water [14]

Organic content in the water is dominated by peat humic compounds which possess aromatic bond complex with functional groups such as-COOH, OH-phenolic and alcoholic OH and is nonbiodegradable and fulvic acid. This trait also causes most of the water Organic peat decomposes naturally difficult. Organic content in the water to form potentially carcinogenic compounds peat include: THM (trihalomethane) in the process of disinfection with chlorine. Humic acid having a molecular weight 2000-100.000 daltons, have the potential to form organochlorines such as THM and HAA (haloacetic acids) is relatively higher than non humus compounds. Humic acid is formed from the decomposition of organic material by aerobic organisms. This acid has a molecular weight of 10,000 to 100,000 g / mol [15]. Peat is an accumulation vegetation that has died and then broken down by anaerobic and aerobic bacteria into components that are more stable. In addition to organic matter that forms peat are also inorganic substances in small quantities. In the environment of deposition of peat more than 90% under water-saturated conditions [16]

Bentonite is a mineral that contains a lot of silica [2] and expressed as hydrated aluminosilicate According [3], 85% of bentonite consists of montmorrillonit, while the other components are: beidellite, saponite, saponite and other minerals. Montmorrillonit structure can undergo substitution of other metals in the lattice krital, such as substituting alumium and phosphorus replaces silicon metal in tetra hedral coordinates, and metals, Fe, Mg, Zn, Ni, can replace the position of aluminum in the octahedral layer [12]. Bentonite granules are fine and stable secondary product on the conditions in the Earth's surface, which formed in nature through four processes; weathering processes, process changes due to hydrothermal solutions, the process of transformation in rocks glass turf and deposition processes are chemically [3].

The survey results revealed that the ability of bentonite greatly influenced by the mineral content monmorrilonit compared with other minerals such as bentonite contained in kaolinite, quartz and cristobalit. This can be addressed that the higher the content monmorrilonitnya the better its ability to lower the peat water parameters. Judging from the composition of the minerals contained in the bentonite, bentonite Traffic turns the peat may reduce water parameters are influenced by the content of silica and alumina and cation exchange capacity (CEC) as ions $Na^{+,}$ Ca^{+2} and Mg^{+2}. Cations cations can be replaced by the ions contained in the peat water. Cation exchange capacity of bentonite is affected by isomorphic substitution in the octahedral and tetrahedral structure at montmorrilonit layer, the hydrogen bonds between H and O and the particle size of bentonite.

According [19] Structure of Bentonite consists of 3 layers of alumina coating in the form of Al_2O_3, the middle layer is sandwiched between two layers of silica (SiO_2) which, between layers of octahedral and tetrahedral are monovalent cations such as Na^+, Ca^{2+} and Mg^{+2}, and has a distance (d- spacing) of approximately 1.2-1.5 um) which can be substituted with the ions contained in the peat water.

4. Conclusion

Activated bentonite changing the chemical composition and structural changes, and also with the addition of 6% HCl activators occur dissolving substances that cover the pores of the bentonite and can expand bennotnite as adsorbent surface. It can increase Traffic Bentonite for mengadsopsi substances present in peat water. Bentonite is in activation with 6% HCl can reduce the color parameters, organic matter and iron content (Fe) contained in the peat water, but has not been effective to raise the pH and reduce TDS water contained in the peat. The resulting peat water can already be used as clean water people living in peat areas, and to serve as a source of drinking water, needs to be continued research to menemulan material that can be combined with bentonite which can neutralize the acidity of the peat water.

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