Comparative Characterization Study of Fuel Pellets from Rice Husk and Wood Chips
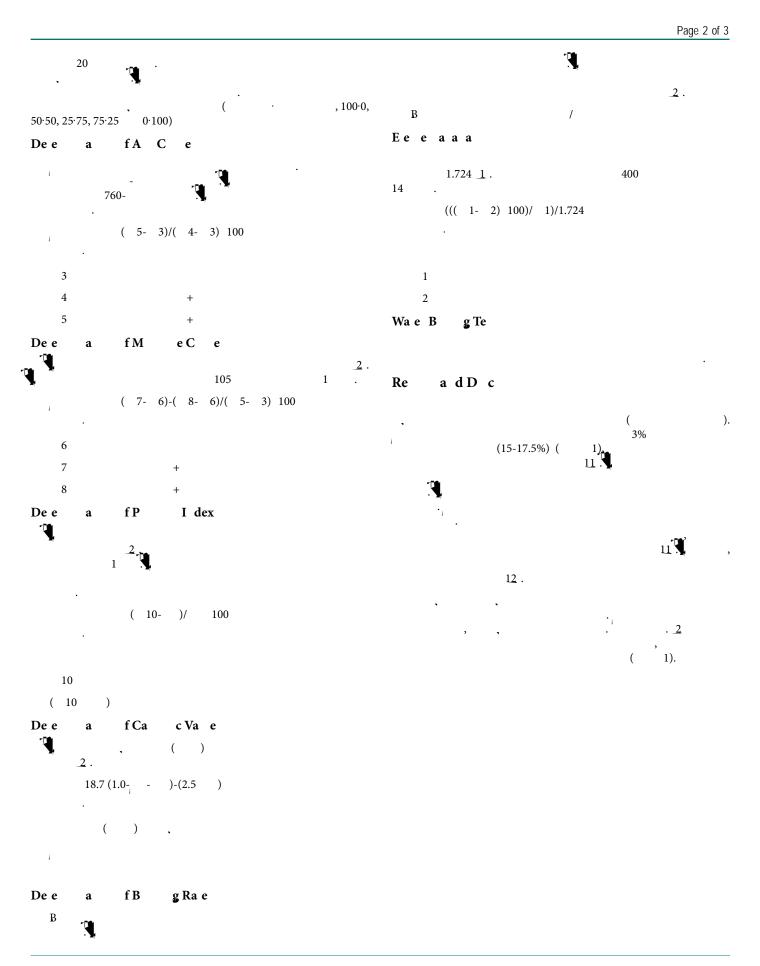
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Increasing energy demand is unavoidable. In this regard, conventional fuels play a major role of total energy requirement than renewable energy. Conventional energy including fossil fuel, coal creates a lot of environmental problems including air pollution, ecological imbalance and environmental degradation. Generation of hilarious amount of carbon dioxide stimulates the global warming and climate change. The over dependence on fossil fuels can be reduced by using renewable and carbon-neutral energy sources in a large amount. Therefore, an eco-friendly, cheap energy source has been increasing the attention. Aside being the alternative renewable energy, biomass contributed to climate change mitigation, energy security, maintaining carbon neutral value. In an effort to provide an affordable solid fuel pellet from disparate weight proportion of rice husk and wood chips. The wood chips were collected from timber workshop at Trincomalee and rice husks were collected from paddy feld cultivation area. Wood chips fuel pellet and rice husk fuel pellets were produced by compaction in a mold with 10mm diameter and 20mm length at 20MPa pressure. Wood chips and rice husk were mixed using following proportions; Rise husk: Wood chips, 100:0, 50:50, 25:75, 75:25 and 0:100. Physical and combustion characters were investigated. The heating value increases with wood chip proportion of the pellet. The calorifc value of wood pellet was observed as 17.89 MJ/kg. Based on the water boiling test, wood pellets are the effective domestic solid fuel. Moreover, wood pellet has a high heating potential than rice husk pellet and rice husk pellet potential could be improved by the addition of wood chips.
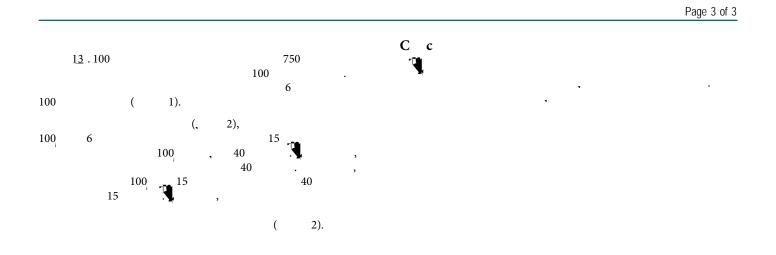
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(, 100·0, 50·50, 25·75, 75·25   0·100)

De e   a   f A   C   e

760-

$(5-3)/(4-3) \times 100$

3
4   +
5   +

De e   a   f M   e C   e

105   1

$(7-6)-(8-6)/(5-3) \times 100$

6
7   +
8   +

De e   a   f P   I dex

1

$(10-)/ \times 100$

10
(10   )

De e   a   f Ca   c Va e

18.7 (1.0-   -   )-(2.5   )

(   )

De e   a   f B   g Ra e

B

B   /

E e   e a a a

1.724   1 .   400

14

$(((1-2) \times 100)/1)/1.724$

1
2

Wa e B   g Te

Re   a d D c

(   ).

3%

(15-17.5%) (1)

11

11   ,

12

(1).

C   c

13 . 100   750
                              100   .
                                        6
100   (1).

                              (,   2),
100   6   15
                    100   ,   40   ,
                              40   .   ,
          100   15   40
     15   .   ,

                              (2).