

Biofuel obtained from limestone and water electrolysis magnesium chloride

With all its biofuel carbon is recovered in the air by  
through the limestone, its combustion does not contribute to  
increase the greenhouse effect

Biofuel obtained limestone magnesium chloride and water.

Biofuels are solutions and energy storage I suggest to get them to use limestone, water and chlorid magnesium:

First, if we take the necessary carbon from CO<sub>2</sub> from limestone, this is equivalent to take the CO<sub>2</sub> in the air because the CaO remains after heating limestone CaCO<sub>3</sub> has the following CO<sub>2</sub> emission can capture CO<sub>2</sub> in air:



Then the hydrogen needed to obtain biofuel, can be first

obtained from electrolysis of molten magnesium chloride MgCl<sub>2</sub> (714 degrees Celsius) which gives us magnesium Mg and chlorine Cl<sub>2</sub>, such as reaction magnesium with dilute hydrochloric acid gives hydrogen, I suggests to make hydrochloric acid from the reaction of chlorine with steam, using a catalyst as activated carbon, as follows:



therefore also the reaction product of oxygen O<sub>2</sub> in addition to the acid hydrochloric HCl.

The reaction yielding hydrogen is as follows:



Note that the limestone CaCO<sub>3</sub> and magnesium chloride MgCl<sub>2</sub> are constantly recycled and we still need the same amount that Initially.

For our biofuel, in addition to hydrogen, it takes methanol and to obtain this, I suggest to react 3 mole dihydrogen H<sub>2</sub> with CO<sub>2</sub> from limestone, first mole hydrogen transform CO<sub>2</sub> into CO and H<sub>2</sub>O, as follows:



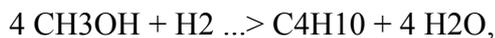
must then be reacted with two moles of hydrogen to one mole CO for methanol CH<sub>3</sub>OH, do not forget to use a catalyst (zinc oxide, copper oxide and chromium) in a temperature of 200 degrees Celsius and a pressure of about 200 atmosphere, this reaction here:



if reacting one mole of methanol with one mole of hydrogen is methane obtained as follows:



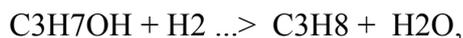
if you want to get a heavier biofuel, must be reacted many moles of methanol with one mole of hydrogen, for example for ethane (2 carbon chains) must be reacting two moles of methanol with one mole of hydrogen, for propane (3 chains carbone) there should be 3 moles of methanol with one mole of dihydrogen, for butane (4 carbon chains) must be reacting 4 moles of methanol with one mole of hydrogen, so here is a example for butane:



also note that we can add two different alcohols for an alcohol heavier and the reaction with the hydrogen removed the alcohol function, take the example of the addition of methanol with ethanol, this give propanol and water:



then if we add one mole of hydrogen with one mole of propanol we obtain a mole of propane and one mole of water as follows:



Gasoline is a mixture of heptane and octane  $\text{C}_7\text{H}_{16}$   $\text{C}_8\text{H}_{18}$ , oil or diesel or heating oil is represented by  $\text{C}_{18}\text{H}_{38}$ ,

kerosene is intermediate between gasoline and diesel.

The Fischer-Tropsch process uses CO with dihydrogen, here I used the  $\text{CO}_2$  with hydrogen.

Reference:

Fischer-Tropsch process

chemistry book has the use of secondary courses:

Title: Chimie générale,

Authors: Omer Bastien, B.Sc.

Benoit Ladouceur, D.Sc. Benoit Ladouceur, D.Sc.

Hubert Laniel, M.Sc. Hubert Laniel, M.Sc.

revised edition, 1969

Beauchemin limited library

450, avenue Beaumont, Montréal 1969

chemistry book has the use of college course:

Title: Chimie 1

2.Les familles chimiques

Authors: M. Tournier Author: M. Tournier

professor at the College de Maisonneuve

Centre Educatif et Culturel Inc.

8101, boul. 8101, boul. Métropolitain, Montréal ., H1J 1J9 .

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title: Des ingénieurs transforment l'air en pétrole, (Engineers transform air oil link):

<http://abcd.vosforums.com/des-ingenieurs-transforment-l-air-en-petrole-t9570.html>

