

The present invention relates to a herbal catalyst containing device for fuel energy saving and pollution control in the Automobiles/ car .

BACKGROUND OF THE INVENTION

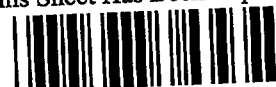
Anti-air pollution and saving of fuel energy efforts in any country have focussed largely on the products of automobile exhaust and fossil fuel combustion. Automobile exhaust produces carbon monoxide, hydrocarbons, lead, nitrogen oxides and sulfur oxides in large quantities. Coal and oil burnt for electric power or for other industrial purposes contribute significant amount of particulates.

A number of approaches were being tried in the area of emission control devices for; pollution control in the automobiles; removal of pollutants from stack gases of industrial plants and the like.

Those skilled in the art of pollution control are familiar with many catalysts developed for the direct reduction of nitrogen. Sometimes the catalyst are used with advantage in the form of supported catalyst which may contain 2-50% of their total weight as oxides of vanadium, molybdenum and/or tungsten.

The embodiment of the present invention relates to a catalyst extracted from the herbs from the species *Aegle* of family Rutaceae and *Ocimum* from the family Labiate to be used in combination.

Aegle marmelos: The herb used in the catalyst is naturally occurring. The use of the herb has resulted in the reduction of carbon monoxide emission. The herb used is



trifoliate aromatic leaves with straight sharp axillary thorns. The active constituent of the said herb are marmalasin, $C_{13}H_{12}O_3$ m.p, 103° and furocoumarin . It further contains 0.6% of essential oil, mostly composed of d-limonene.

Ocimum basilicum: the leaves used in the catalyst are ovate-lanceolate, acuminate, cryogenetic.

Another embodiment of the present invention lies in the hollow metallic gasket. The orifice of the metallic gasket plays an important role in the elimination of carbon deposit.

The present invention has resulted in the drastic reduction of CO emission.

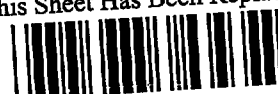
It has resulted in the increase of the life of spark plug because of no-scale formation.

The present catalytic composition has resulted in the reduction of the chances of replacement of engine-oil.

Still another object of the present invention is to provide a container for the catalyst having an inlet and an outlet.

It has been recognized that the high temperature combustion of hydrocarbonaceous fuels results in the production of various oxides which when released in the atmosphere results in the pollution, smog and other deleterious effects upon the environment.

The present invention has resulted in the reduction of these oxides by the use of a catalyst.



The another embodiment of the present invention is that the herbal catalyst so prepared is having a shelf life of more than a year.

Another object of the present invention is that the present invented catalyst is eco-friendly and bio-degradable.

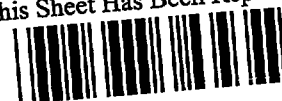
The present catalyst has resulted in the reduction of semi burnt hydrocarbon particles by 25% which results in the increase of engine power and the better milage.

In the present system a container containing the catalyst has been attached to the storage chamber for gasoline of the carburetor. The storage chamber for the gasoline is connected to the container containing the catalyst with the help of a flexible rubber pipe having metallic nipple. As the engine warms up, the choke which is a part of carburetor, is gradually opened up. The fuel flows out of the ideling jet into a vacuum in the passage leading to the cylinders when the throttle valve is almost closed.

In the present system when the engine starts working the vaccum is created, the inlet of the catalyst container draws the air and a portion of the air is sucked by the catalyst which results in the flow of catalyst towards the flexible rubber pipe which inturn is connected to the gasoline storage chamber which is controlled by a valve actuated by hollow metallic gasket. The catalyst chamber is filled one third with the catalyst and the amount is controlled automatically.

Yet another and one of the most important object of the present invention is to provide maximum utilisation of fuel. The fuel is burnt to its maximum. In the conventional automobile engine the hydrocarbon particles which are exhausted not only cause pollution but also does not utilise the fuel efficiency to its fullest.

In the present system, when the air is mixed with the fuel instead of immediately



starting ignition and resulting the opening of the exhaust, the air from the catalyst container through rubber pipe goes to the fuel tank, such air from the container contains 5% of catalytic moisture . When this air enters through the metallic hollow gasket it mixes with the air present in the fuel tank. The air mixture flows downwards in the hollow gasket and goes manifold before finally reaching the firing chamber for the ignition to takes place.

The present invention has resulted in the reduction of total unburnt hydrocarbon. A test has been conducted for the calculation of emission of CO and Hydrocarbon with and without the use of the catalyst. The detailed report shows that the existing emission condition of the carbon monoxide is 3.34% of CO. Unutilised Hydrocarbon emission is 0790 PPM in normal conditions.

The catalyst is introduced and the orifice is controlled at 1.5mm, the CO emission is reduced to 0.25% and the unutilised Hydro Carbon emission is reduced to 0600 PPM.

When orifice is adjusted to 2mm, the CO emission comes to 0.27% and the unutilised Hydro Carbon emission is 0900 PPM.

When orifice is adjusted to 2.5 mm, the CO emission comes to 0.24% and the unutilised Hydro Carbon emission is 1140 PPM.

The 1.5 mm orifice is the most ideal by which the CO is reduced from 3.34 % - 0.25% i.e. 3.19% is reduced and at the same time, the unutilised Hydro Carbon emission drastically reduced to 0600 PPM from 790 PPM by utilising 190 PPM of hydrocarbon which increases the efficiency of the engine which results in the reduction of fuel consumption due to additional utilisation of PPM in burning during compression which directly give additional milage. Hence it is another object of the present invention to save fuel energy also.



EMISSION TEST CHART

On 100 cc Two stroke Motor Cycle

STANDARD CONDITION

DATE	AT IDLING SPEED		
	CO	HC-PPM	RPM
24.02.93	1.3 TO 1.5	6700 TO 7000	1250 TO 1350
25.02.93	2.5	6850	1510/1550
20.12.93	3.6	8320	1600
20.12.93	3.87	8640	1580
14.02.94	2.89	7160/7320	1530

AFTER INTRODUCING THE INNOVATIVE EQUIPMENT

DATE	AT IDLING SPEED		
	CO	HC-PPM	RPM
24.02.93	0.02 TO 0.22	5600 TO 5900	1850
25.02.93	0.2	5700	1680
20.12.93	0.17	6580	1300
20.12.93	0.16	7160	1280
14.02.94	0.18	6480	1400
14.02.94	0.16	6470	1200



The same test was conducted on car also and has been found that in 1100 cc car the CO emitted is 3-5% and unburnt hydrocarbon emitted is above 900 PPM. However with the use of the present invention the totally unburnt Hydrocarbon particles are reduced by 15-25%.. Semiburnt hydrocarbon particles is reduced by 25%. The production of nitrogen oxide is also reduced to quite an extent.

Another test has been conducted on diesel engine where the catalyst for environmental pollution control has been used. The report indicates that the smoke mean level is reduced from the standered condition of 44.0% to 17.2% after the introduction of the catalyst.

The naturally available herbs to be used in combination to act as catalyst are extracted from the species Aegle and Ocimum .

The process for the preparation of synergistic herbal catalytic composition is as follows:

The said naturally available herbs are collected and processed. The leaves of the said organic materials are plucked and soaked in water for a time period of two days, for the process of brewing. The soaking results in the fungal growth on the said mixture of leaves. After the steps of brewing, the mixture of organic materials with fungal growth are grinded by the conventional manner to make it a homogenous paste having 300-400 mesh sieve size. After the homogeneous catalytic mixture is prepared, the step followed is the heating of said homogenous mixture in the open vessel which is followed by the step of boiling, the said mixture is boiled at a boiling temperature for 20-40 minutes in an open atmosphere. Evaporation of the mixture is allowed to 3-4% of the total said mixture. The evaporation step is followed by the addition of water in the said mixture at the rate of 25%. The said mixture is further allowed to heat . After the heating process is done the mixture is allowed to cool at ambient temperatures. The cooling results the said mixture to be in concentrated form. The resulted concentrated liquor is used as the catalyst.

The said concentrated catalytic mixture is to be used after making it in dilute form. The ratio of water added to the said concentrated catalytic mixture is in the ratio of 1:10, concentrated herbal catalytic mixture: water.

In the combination of the two herbs to be used in the said catalyst the leaves of the said herbs are mixed in the proportion of Aegle marmelos: Ocimum basilicum, 60:40.

The present invention relates to a synergistic herbal catalytic composition for controlling the pollution and saving fuel energy in the automobiles, comprising of:

- from about 50 to 65% of Aegle marmelos
- from about 45 to 50% of Ocimum basilicum

wherein said constituents are soaked in water for the brewing and are grounded with the fungal growth to the mesh size of 300-400, the said composition is boiled followed by the evaporation of 3-5% of the said composition, water is added to the said composition during heating, after heating the said composition is cooled at ambient temperatures, resulting said catalytic composition to be in concentrated form, said concentrated catalytic composition is diluted before using.

BRIEF DESCRIPTION OF THE DRAWING

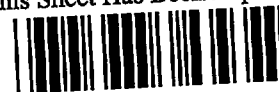
Figure 1:- shows the connection between the catalyst container and the carburetor.

DETAILED DESCRIPTION OF THE DRAWING

In the catalyst container (1) having inlet (2) and outlet(3) the air flows in through inlet(2) and mixes with the catalyst available in the catalyst container. The container is filled 1/3 . The air mixed with catalyst moves out through an outlet(3) and passes from a flexible pipe(4) having one end connected to the outlet(3) and other end connected to the hollow metallic gasket (5)



Thus the present invention is advantageous because of reduction of CO emission to minimum, maximum burning of fuel, reduction in the exhausting hydrocarbon particles by 25% as when the air is mixed with fuel and engine ignites immediately the exhaust opens resulting in the emission of unburnt hydrocarbon which are a great source of pollution. It has resulted in the increase of the life of spark plug because of no-scale formation. The present catalytic composition has resulted in the reduction of the chances of replacement of engine-oil. The herbal catalyst so prepared is having a shelf life of more than a year. The present composition is a 100% herbal composition, no synthetic chemicals are used in it even as preservative. The constituents of the present composition themselves acts as preservatives. The present invented catalyst is eco-friendly and bio-degradable. It is highly economical as all the constituents are naturally occurring and are found in abundance.





WE CLAIM

1) A herbal catalytic composition for controlling the pollution and saving fuel energy in the automobiles, comprising of:

- from about 50-65% of Aegle marmelos
- from about 45-50% of Ocimum basilicum

wherein said constituents are soaked in water for the brewing and are grounded with the fungal growth to the mesh size of 300-400, the said composition is boiled followed by the evaporation of 3-5% of the said composition, water is added to the said composition during heating, after heating the said composition is cooled at ambient temperatures, resulting said catalytic composition to be in concentrated form, said concentrated catalytic composition is diluted before using.

2) A herbal catalytic composition as claimed in claim 1 where the said concentrated catalytic composition is diluted by adding the water in the ratio of catalytic composition:water is 1:10.

3) A process for the preparation of herbal catalytic composition, wherein the constituents Aegle marmelos and Ocimum basilicum are taken in the ratio of from about 50-65% of Aegle marmelos and from about 45-50% of Ocimum basilicum, soaked in water for the time period of 2-3 days for the brewing and resulted in the fungal growth on the said constituents, said composition is grinded to make a homogeneous paste which is heated to the boiling temperature for 20-40 minutes, evaporation of the said composition is allowed to 3-4% of the total said composition, water is added to the said composition at the rate of 25%, further heating of the said composition results in the preparation of concentrated catalytic mixture.

4) A pollution control and fuel energy saving device for use in the automobiles/cars





comprising a hollow metallic gasket fitted above the carburetor, a herbal catalyst container containing the said catalyst composition, means for controlling the level of catalyst in the said container, means for inletting the air flow in the said catalyst container, means for injecting the said air mixed with catalyst vapour in the said matallic gasket to the desired predetermined proportion..

5) A pollution control and fuel energy saving device for use in the automobiles/cars as claimed in claim 4, wherein hollow metallic gasket is circular in cross-section having an orifice from 1.5-2.5 mm.

6) A pollution control and fuel energy saving device for use in the automobiles/cars as claimed in claim 4, wherein the catalyst container is a double walled vessel having an inlet and an outlet opening.

7) A pollution control and fuel energy saving device for use in the automobiles/cars as claimed in claim 4, wherein the said means for inletting the air, is a cylindrical pipe attached in the centre of the said container.

8) A pollution control and fuel energy saving device to be used in the automobiles/cars as claimed in claim 4, wherein the means for injecting the air containing catalyst vapour, is a flexible pipe whose inlet is attached to the catalytic container and outlet is attached to the hollow metallic gasket.

9) A pollution control and fuel energy saving device to be used in the automobiles/cars as claimed in claim 4, where said container has means for controlling the level of the catalyst in the said container.

10) A herbal catalytic composition as claimed in claim 4, wherein the said means is a back-up capsule connected to the catalyst container, said catalyst container is having a float valve to keep the catalyst level at 1/3rd of volume. .

