Plastic pyrolyzer

Nomade des Mers

https://lowtechlab.dokit.app/wiki/Pyrolyseur_de_plastique/en

Dernière modification le 02/11/2025

Difficulté Moyen

Durée 4 heure(s)

Coût 30 EUR (€)

Description

Produce fuel from plastic

Sommaire

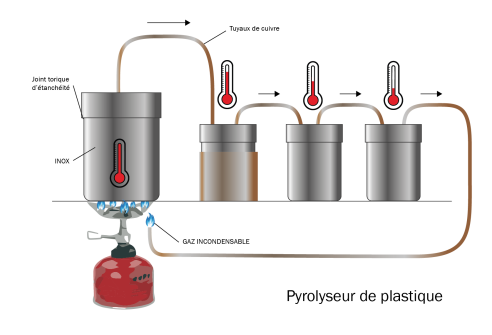
Introduction

THIS PYROLYSER IS A PROTOTYPE WHOSE EFFECTIVENESS AND POTENTIAL ENVIRONMENTAL AND HEALTH RISKS HAVE NOT BEEN ASSESSED. THANK YOU FOR CONSIDERING IT AS SUCH

Plastic pyrolysis is a distillation process used to transform plastic waste into fuel. The waste is heated to more than 400°C in a first tank and is transformed into gas. Depending on the condensation (cooling) temperatures of this gas, different types of fuel are obtained:

- between 390 and 170°C, condensed gas produces diesel (diesel).
- between 210 and 20°C, condensed gas produces gasoline.
- below 20°C, there remains non-condensable residual gas which can be used to supply the heating of the process.

As part of this prototype, only polypropylene (PP) and/or high density polyethylene (HDPE) and low density polyethylene (LDPE) are used. Note that a majority of polypropylene will give more gasoline, just as a majority of polyethylene will give more diesel. However, it is possible to mix the two.



Pyrolyseur de plastique

Matériaux

- 1 large stainless steel tank with lid
- 3 small stainless steel tanks
- copper pipes (diameter 6mm)
- 7 copper uniseal joint (for watertightness of joints)
- O-ring (for watertightness of tanks)
- Plastic waste PP and/or HDPE/LDPE

Outils

- Solder
- A heating system (min. 400°C)
- butane/propane gas canister (375mL)

Étape 1 - Pack the first tank with plastic

For this test, plastic waste is mostly polypropylene.

Notes et références

https://en.wikipedia.org/wiki/Pyrolysis
Published

Étape 2 - Preheat the second tank

Preheating is necessary. It allows for the condensation of gases at high temperature before passing through the last two tanks.

Étape 3 - Formation of residual gas

Let plastic waste consume itself until non-condensable gas forms. It comes as an addition to the gas initially used. For this test, 125mL of canister gas has been used, to which has been added residual gas.

Étape 4 - Retrieval of fuel

Here, the machine was heated during roughly one hour. Switch off the system and let it cool down before opening the tanks. We get around 125mL of fuel in tank n°2 and 30mL of fuel in tank n°3.

- Result of test to confirm in the lab

Étape 5 -

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