



# FUELS TEAM

**SUMMARY:**

**“DROP-IN”  
MOTOR FUEL  
BLEND-STOCKS  
NEEDED TO  
ACHIEVE  
FUTURE  
ENERGY POLICY  
GOALS**

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**A  
DEFINITION OF  
“DROP-IN” MOTOR  
FUEL**

# “Drop-in” (fungible) motor fuel blend-stocks needed to achieve future energy policy goals.

This note summarizes the EFOA technical paper on this topic (Ref 1) which explains and proposes a definition for “drop-in” motor fuel or blend-stocks as up until now, most of the proposed definitions for ‘drop in’ motor fuel, are either relatively vague or alternatively too restricting (such as labels of hydrocarbons or biofuel).

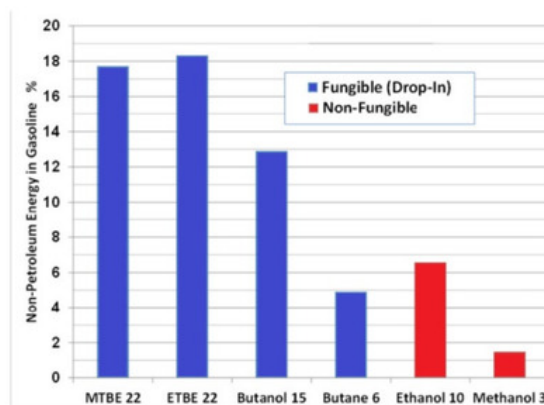
“Drop-in” fuels or blend-stocks are blending components for conventional motor fuels:

- generally produced from alternative, non-crude oil carbon based energy sources,
- which can be used by oil refiners/fuel blenders either to economically expand their production of various bulk refined petroleum products, to meet specific requirements (e.g. bio content) required by local government policy or to deliver specific technical properties (e.g. octane).
- that will produce finished motor fuels that maintain their ‘fungible’ characteristics (i.e. mix ability and interchangeability) in the ‘common carrier’ petroleum product distribution and storage system (bulk petroleum product distribution infrastructure),
- and that will maintain phase stability and chemical stability when in contact with incidental free standing water during transit and storage in the system.

Previously proposed definitions have not defined the technical properties that provide the ‘drop in’ fuel characteristics, which are needed to maximize both the blending flexibility and the energy replacement capability.

The language in the proposed definition for “Drop-in” motor fuel blend-stocks recognizes and conforms to the key technical characteristics that make up fungibility in the petroleum products refining and marketing industries. In addition to being sourced from non-petroleum energy, the ‘Drop-in’ blendstock must have three general characteristics or properties to achieve fungibility: (1) meet back-end distillation temperature of the motor fuel specifications, (2) have low water extraction properties (i.e. phase stability) in wet motor fuel storage systems (up to 1% water), and (3) have near-linear fuel blending properties.

Clearly all “drop-in” fuels or blend-stocks have a maximum level, which varies depending on the specific “drop-in”, despite this; the benefits of particular blend-stocks can be very high. For example, the energy supply potential from non-petroleum blend-stocks such as MTBE and ETBE as illustrated below.



# ABOUT FUEL ETHERS

FUEL ETHERS, INCLUDING MTBE, (BIO)-ETBE, TAME AND TAE, ARE KEY COMPONENTS FOR THE PRODUCTION OF HIGH OCTANE FUELS. THEY ARE THE CLEAN REPLACEMENT FOR COMPOUNDS THAT POSE A PROVEN RISK TO HEALTH AND THE ENVIRONMENT. WHETHER MANUFACTURED FROM TRADITIONAL HYDROCARBONS OR RENEWABLE BIOMASS, FUEL ETHERS ARE MORE ENERGY DENSE THAN ALCOHOLS. THEY THEREFORE INCREASE PETROL'S PERFORMANCE, WHILE REDUCING THE EMISSIONS OF AIR POLLUTANTS AND CO<sub>2</sub> ACROSS THEIR LIFE-CYCLE.

