

# Handelshaus Runkel

Biogene Treib- und Schmierstoffe  
Pflanzenöltechnik . New-Tech-Products



## The *planto-tec* process A new technology for fuel production

### Report on Content and Action

The *planto-tec* additive process makes it possible for the first time to use the whole range of vegetable oils in their native form as fuel for diesel motors. This means that a diesel fuel is available that is renewable, very environment-friendly, does not release CO<sub>2</sub> into the atmosphere, and enables the mobility of future generations. Monocultures can be best avoided through the use of biodiversity (there are more than 400 kinds of oil plants). Oil plant culture in a mixed environment (flax and cereals) even results in better oil yields without using more cultivated ground. Oil plants such as physic nut (*Jatropha*) can be grown in regions and soils like e.g. savanna, where no other food can be produced.

Chemically speaking, vegetable oils consist mainly of glycerin esters from the trivalent alcohol glycerin. Three fat acids (C<sub>8</sub> – C<sub>18</sub>) have condensed to each valency through water decomposition. They are called phosphoglycerides, and they have an important biological function as membrane lipids. This complex structure of vegetable oils and fats results in a much higher molecular mass in comparison to the isolated hydrocarbon molecules of diesel. Vegetable oils also feature a corresponding higher viscosity, according to their structure. In order for vegetable oils to be directly usable, these molecular chains must be broken. Viscosity must be kept low enough for use in motors. That is why Plantanol 100 (Additive + Vegetable-Oil) and Plantanol-diesel (thinned oil) as fuels are available to cover all kinds of engines.

Moreover, the use of cleaning substances, oxidation stabilizers and especially chemically modified alcohols is essential for improvement and enhancement of the combustion, and for total inclusion of the fats.

All this shows that DX 52 is a highly complex mixture of active substances.

On top of this, the cleaning substances give guarantee for a clean combustion chamber. Resinous of the burning process, which usually damage motors, can be avoided by correct application of Additive and the use of suitable vegetable oils (provided the machine is intact).

**This means that vegetable oil can be used as fuel in all diesel motors of all marks, either exclusively or mixed (as the most important component)!**

In contrast to Biodiesel, the *planto-tec* process does not require any modification of the vegetable oil like esterification. No catalyst such as caustic soda is needed, either, as it would make the mixture incompatible with certain types of motor gaskets. DX 52's high range of gasket compatibility was confirmed in a series of tests (Pressol).

The oxygen contained in the biodiesel molecule (R1-COO-CH<sub>3</sub>) makes biodiesel more polar and energy-poorer (Hu = 37.1 MJ/kg) than fossil diesel fuel (Hu = 42.7 MJ/kg). The ecological balance shows that native vegetable oils require much less energy for their production than technically modified oils.

The oils themselves are supplied from oil mills according to specific quality criteria. Basically every kind of motor-suitable vegetable oil can be applied using the *planto-tec* process. The process allows additive complexes to influence the essential parameters of vegetable oil to be used as fuel.

Research has shown that soot can be reduced by up to 92 % if vehicles are fully equipped with ecological use of biogenetic, vegetable-oil-based motor oil and biofuel (Plantanol). This enables very environment-friendly and regenerative mechanical work.

As suppliers of environment-friendly vehicle technology, Handelshaus Runkel puts great emphasis on sustainability and respect for the environment. However, market position, and hence sales potential, of these products essentially depend on market price. That's the reason why it is not always possible to use pure biogenetic components only in additive production.

We can confirm that the current basis for DX 52 consists by more than 98 % of sustainable and renewable raw materials, the environmental innocuousness whereof has been proven. The eco-toxicological tests carried out by the Institut für Wasserwirtschaft und Luftreinhaltung (IWL – Institute for Water Management and Air Purity, Hürth) certify DX 52's a good and quick biodegradability and innocuousness to living cultures.

We hope that this report will contribute to awareness raising and through this to better understanding and appreciation of this new technology.

The experience of numerous customers who report clear improvements in consumption rate (up to 10 %) as well as reduced application of original fuel in motor oil, in new as well as in retrofitted vehicles (one- or two-tank system), testify to the usefulness and added value of this additive in vegetable oil technology.

Thanks to this, nearly unlimited mechanical life is basically possible with the use of vegetable oil.

Usage reports are available upon request.

Further information and 2 Films (Videos) are available on our homepage

[www.handelshaus-runkel.de](http://www.handelshaus-runkel.de) (Plantanol Video)

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