

**FREE**  
**CLEANLIFE**<sup>®</sup>  
SMALL ENGINE GASOLINE



Product Information



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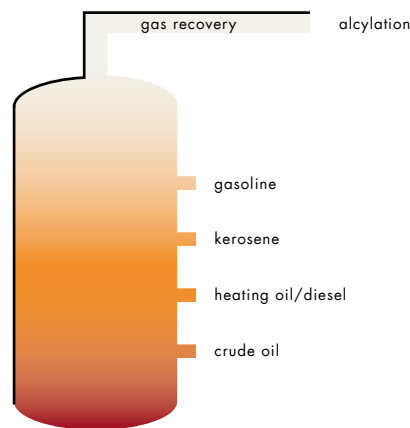
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## 1 GENERAL INFORMATION ABOUT ALKYLATE GASOLINE

Alkylate gasoline, which is also colloquially called sepia gasoline, is the umbrella term for alkylated gasolines that are mostly free of aromatics (cyclic hydrocarbons) that are harmful to health and the environment.

Alkylate gasoline is initially derived from refinery gas, which is refined into an extremely pure fuel. The special gasoline thus combusts virtually smoke- and soot-free. Particularly noteworthy is that alkylate gasoline is almost free of carcinogenic benzene.



- CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline is purely a refinery product and contains no cracking products. Unlike traditional gasoline, it does not contain any reactive substances that oxidize and polymerize. Instead, it is chemically stable and can thus be stored for long periods of time. No deposits that would negatively impact performance are formed.
- CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline 2-T with 2 % fully synthetic high-performance oil is available as a ready-mixed 2-stroke gasoline for chainsaws, brush cutters, hedge trimmers, mopeds, lawn trimmers, and other two-stroke engines.
- CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline 4-T is available without oil for lawnmowers, karts, generators, motor boats and other four-stroke engines.
- CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline is available in 5 liter and 25 liter canisters as well as in 60 liter and 200 liter barrels.





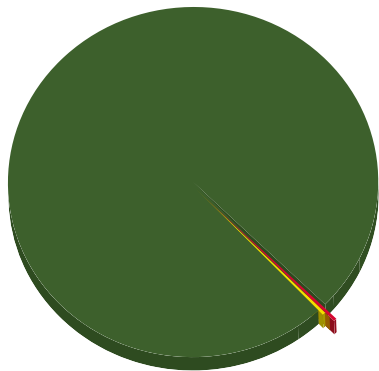
## 2 ADVANTAGES COMPARED TO CONVENTIONAL GASOLINE

The combustion of normal gasoline in two- or four-stroke engines, such as those in chainsaws or lawnmowers, entails significant pollutant emissions that are not only detrimental to the environment but above all also very harmful to health. Besides benzene, large amounts of narcotic hydrocarbon compounds such as toluene, xylene, nerve damaging n-hexane and carbon monoxide are also released.

While conventional gasoline contains high amounts of these harmful aromatics, CLEANLIFE<sup>®</sup> FREE alkylate gasoline consists mainly of alkanes (paraffins). Alkanes burn more efficiently compared to aromatics, because they do not contain any benzene rings. Some measurements have shown that emissions of benzene and n-hexane can be reduced by more than 80 % when alkylate gasoline is used instead of conventional gasoline.

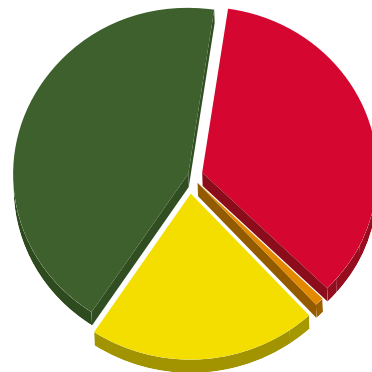
### CLEANLIFE<sup>®</sup> FREE alkylate gasoline

■ aromatics	0,1 Vol. %
■ benzene	<0,01 Vol. %
■ olefins	0,1 Vol. %
■ isoparaffins	99,79 Vol. %



### conventional gasoline

■ aromatics	35 Vol. %
■ benzene	1 Vol. %
■ olefins	21 Vol. %
■ isoparaffins	43 Vol. %



In addition to reduced emissions, CLEANLIFE<sup>®</sup> FREE alkylate gasoline has numerous other advantages compared to conventional gasoline.

### Storage

CLEANLIFE<sup>®</sup> FREE alkylate gasoline is chemically stable and can be stored for several years. Conventional gasoline contains olefins, which oxidize and polymerize after only a short time. This is why conventional gasoline can only be stored for a few months. Olefins are monounsaturated hydrocarbons that are particularly prone to polymerization, i.e., the concatenation of molecules.



## Better operation

CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline has a higher octane rating (RON 95 and MON 92) than conventional gasoline (RON 95 and MON 85). This reduces knocking (uncontrolled combustion due to spontaneous combustion of the fuel) during operation and thus protects the engine.

Octane rating: The antiknock value is separated into RON and MON (research method and motor method). Both octane numbers characterize different fuel properties. The MON value in particular represents high-speed knocking behavior.

## Device protection

Conventional gasoline contains about 35 % strong solvents, while CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline does not contain any solvents.

The solvents contained in conventional gasoline attack the rubber components in engines. This means that when the machine is not used for an extended period of time, the rubber components of the engine are no longer in contact with gasoline and the solvents escape from the rubber. If this cycle repeats several times, the plasticizer is withdrawn from the rubber, thus causing it to become increasingly brittle and eventually crack.

## Better starting

The vapor pressure of CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline of 60 to 65 kpa is approximately 20 kpa below the vapor pressure of conventional gasoline (winter quality). The low evaporation of CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline minimizes carbon deposits in the engine and increases the reliability for hot and cold starting.

Vapor pressure is the pressure that occurs in a closed container in relation to temperature and the evaporation of a liquid. It influences the hot and cold starting behavior of engines.

## Boiling curve - end boiling point

Unlike conventional gasoline (end boiling point max. 210 °C), CLEANLIFE<sup>®</sup> *FREE* alkylate gasoline has an end boiling point of approx. 150 °C. This has the advantage that no carbon deposits can form in the combustion chamber, on the valves, and on the inlet/outlet openings.

Boiling curve: Because the molecules in gasoline have different chemical and physical properties, there is no fixed boiling point, but instead a so-called boiling curve. This value indicates the percentage of the total volume that completely evaporates at a certain temperature.



## Purity

Conventional gasoline consists of a variety of components, some of which produce harmful and undesirable by-products, such as soot. In comparison, the combustion of CLEANLIFE<sup>®</sup> FREE alkylate gasoline is virtually free of smoke and soot. No deposits that would negatively impact performance are formed.

## Scrubbing effect

Engines that were previously operated with conventional gasoline are generally subject to residues and deposits. The cleaning effect of alkylate gasoline can dislodge this type of contamination. This is why it is recommended to first remove stuck combustion residues in machines that were operated an extended time before switching over.

## Density

Due to the process of alkylation, CLEANLIFE<sup>®</sup> FREE alkylate gasoline has a lower density (680 - 720 kg / m<sup>3</sup>) at 15 °C than conventional gasoline (720 -775 kg / m<sup>3</sup>) at the same temperature. It is thus recommended that the engines are first adjusted by means of the variable injector.

## 3 FUMES AND EXHAUST GASES

Chainsaws running with conventional gasoline release more benzene into the air per hour of operation than 100 cars with a catalyst. This is particularly disconcerting considering that users of hand-held devices inhale these gases in the immediate vicinity of the exhaust. Besides benzene, large amounts of narcotic hydrocarbon compounds such as toluene, xylene, nerve damaging n-hexane, and the blood poison carbon monoxide are also released from these engines. Depending on the pollutant, these types of exhausts can damage the respiratory system, the oxygen uptake capacity of the blood, as well as human DNA. Drowsiness and dizziness also exacerbate the risk of serious accidents when handling chainsaws, which is already high to begin with.

CLEANLIFE<sup>®</sup> FREE is a low-emission, almost benzene-free alkylate gasoline. The concentrations of sulphur, n-hexane and the narcotic aromatics toluene and xylene are also only a fraction of those of conventional gasoline.



## 4 CLEANLIFE<sup>®</sup> FREE ALKYLATE GASOLINE OVERVIEW

- Purest and constant refinery quality
- Burns clean, with no residue
- Aromatics content reduced to a minimum
- No benzene, sulphur and lead
- Safe workplace, clean environment
- Climate-neutral through compensation with climate protection certificates
- Optimal running characteristics
- Best standard values and long shelf life
- Excellent cold start behavior

**GERÄTEBENZIN**  
ESSENCE ALKYLÉE  
GASOLINA PARA APARATOS  
BENZINA PER APPARECCHI

**2**  
SAFETY DATA SHEET

**5L**

<p><b>GERÄTEBENZIN</b></p> <ul style="list-style-type: none"> <li>• HÖFERSÄGEN</li> <li>• HÖFERSCHNITZEN</li> <li>• HECKENSCHNEIDEN</li> <li>• TRENNSCHNEIDER</li> </ul>	<p><b>APPROPIADA PARA*</b></p> <ul style="list-style-type: none"> <li>• MOTOSIERRAS</li> <li>• GUADAMÁS CON MOTOR</li> <li>• CORTACESPEDOS</li> <li>• SEPARADORAS-CORTACEDRAS</li> </ul>
<p><b>CONVIENT POUR*</b></p> <ul style="list-style-type: none"> <li>• TRONÇONNEUSES</li> <li>• DÉBRUYEURS/SALEUSES</li> <li>• SOUFFLEUSES À FEUILLES</li> <li>• TAILLE HAIES</li> <li>• SCIES À MÉTAUX</li> </ul>	<p><b>ADATTO A*</b></p> <ul style="list-style-type: none"> <li>• MOTOSIERRE</li> <li>• DECESPIGLIATORI</li> <li>• SOFFIATORI PER FOGLIE</li> <li>• TOSASIEPI</li> <li>• TRONCATORI</li> </ul>

**GERÄTEBENZIN**  
ESSENCE ALKYLÉE  
GASOLINA PARA APARATOS  
BENZINA PER APPARECCHI

**4**  
SAFETY DATA SHEET

**5L**

<p><b>GERÄTEBENZIN</b></p> <ul style="list-style-type: none"> <li>• 4-TAKT-BASISMASCHINEN</li> <li>• AIRFITZBREMSENÄHNER</li> <li>• SCHNEIFRÄSEN</li> <li>• KARTS</li> <li>• GENERATOREN</li> </ul>	<p><b>APPROPIADA PARA*</b></p> <ul style="list-style-type: none"> <li>• COCINASPECIES DE 4 TIEMPOS</li> <li>• TRACTORES CONTACTACÉSPED</li> <li>• CORTANIEVES</li> <li>• KARTS</li> <li>• GENERADORES</li> </ul>
<p><b>CONVIENT POUR*</b></p> <ul style="list-style-type: none"> <li>• MOTEURS 4 TEMPS</li> <li>• MOTEURS AUTOPORTÉS</li> <li>• SOUFFLEUSES À NEIGE</li> <li>• KARTS</li> <li>• GÉNÉRATEURS</li> </ul>	<p><b>ADATTO A*</b></p> <ul style="list-style-type: none"> <li>• MOTOSEPIE A 4 TEMPI</li> <li>• TRATTORI A TOSABERRA</li> <li>• SPAZZANIEVE</li> <li>• KART</li> <li>• GNERATORI</li> </ul>

More questions?  
We're glad to help!

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