ELF E 85

"Unleaded competition fuel for 2-stroke and 4-stroke engines"

Our formulae use pure bases to guarantee naturally stable, long-lasting properties, consistent from one production batch to another. This search for constant and optimum quality ensures you obtain first class performance, in conformity with competition requirements.

"The unleaded biofuel from ELF for 2-stroke and 4-stroke engines"

Uses

- **ELF E 85** has been designed differently from the super-ethanol and E 85 fuels already on the market regarding its constant quality and composition, improved combustion speed and considerably increased Net Calorific Value.
- **ELF E 85 does not conform** to FIA Annex J regulations.
- **ELF E 85** provides optimal resistance against knocking and superlative fuel reactivity due to its exceptional RON and sensitivity. This fuel therefore permits tuning optimised ignition timing and increases the power generated.
- Adapted everywhere naturally aspirated and turbocharged 4-stroke engines are used:
  - Group A & Group N
  - WRC & Rallycross
  - Hill climbing

Characteristics

		Standard data
OCTANE NUMBERS	RON	108
	MON	89
DENSITY	kg/l at 15°C	0.79
OXYGEN	% m/m	3.2
AIR/FUEL RATIO		9.32
VAPOUR PRESSURE	Bar at 37,8°C	0.400
SULPHUR	mg/kg	<30
LEAD CONTENT	g/litre	<0.001
BENZENE	% vol.	0.1

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Properties

Fuel characteristics	→	Technical advantages	→	Engine benefits
Exceptional octane numbers	→	Excellent resistance to **knocking**, ensuring controlled combustion	→	**Exceptional reliability under severe conditions (supercharging pressure / compression rate / intake temperature).** **Permits using optimised ignition timing for higher power.**
E 85 for the general public varies from an ethanol content from 65 to 85%, whereas **ELF E 85 has a constant content.**	→	Effect of **natural supercharging** High latent vaporisation heat favouring **mixture cooling** before combustion Increased **volume filling** by charge cooling	→	**Spontaneous power gains (without specific tuning) over the whole range.** **Increased power by optimisation before ignition.** **Excellent engine response in transient phase.** **Constant product quality requiring no adaptation of engine tuning**
Selection of the **best oxygenated and olefin compounds**	→	**Excellent combustion speed** for optimised yields	→	**Favours engine speed increases and engine reactivity.**
Very low **benzene** and **sulphur** contents	→	Harmless	→	**No special precautions for use**

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Recommendations

- This fuel requires the use of an adapted fuel line (compatible materials): seals and elastomers.
- **ELF E 85** provides exceptional gains in power and reliability, without fine-tuning.
- Engine mapping must be optimised (Air/Fuel ratio, ignition sequence) to obtain full benefit from this product. The air/fuel ratio of **ELF E 85** is very different from that of an ordinary fuel.
- The constant quality of our products ensure that there is no specific need for tuning from one season to another, unlike the E85 for the general public.

Storage

To preserve its original properties and comply with the Health and Safety rules pertaining to fuels, **ELF E 85** must be handled and stored away from sunlight and bad weather and properly resealed in its drum after each use, to avoid loss of the lightest particles.

Glossary

RON & MON : RON & MON characterise resistance to knocking (see definition) of a fuel used in a spark-ignition engine. RON is representative of the operation of an engine running under cold and low speed conditions, while MON is representative of an engine running under warm and high speed conditions.
For competition use, MON is commonly used to describe a fuel's anti-knocking capacity.
Higher octane levels allow engines to run more efficiently under severe, high speed conditions (high rotation speed, high compression ratio).

KNOCKING: Knocking is the result of non controlled fuel combustion in the engine. Sometimes revealed by a characteristic 'pinking' noise, these detonation phenomena often damage the engine.
There are two ways to prevent knocking: tuning the ignition timing and/or using a fuel with better anti-knocking characteristics (RON/MON and combustion speed).

CHARGE COOLING: The amount of energy needed to vaporise fuel depends on the latent vaporisation heat. This phenomenon leads to cooling the intake air which in turn generates internal supercharging.

COMBUSTION SPEED: It characterizes the fuel's reactivity in the combustion process. The higher the combustion speed, the more effective it is, and the greater the power produced by the engine, via a better cycle yield.

OXYGEN CONTENT: Oxygenated compounds naturally contain high levels of octane and generally improve engine filling capacities thanks to the cooling effect on the admitted air flow (see definition). Others also have remarkable combustion speeds.

DENSITY (or dimensional weight): Usually measured at 15°C and under 1 bar, given in kg/litre (or in kg/m3), this is the density of one litre (or 1000 litres) of fuel.
A fuel's density increases as its temperature drops.

VAPOUR PRESSURE: Usually measured at 37.8°C (Reid vapour pressure), by bar (or Pascals), with its distillation curve, this dimension characterises a fuel's capacity to evaporate. This property comes into play when the petrol is mixed with the air intake and for cold engine starts. If the vapour pressure is too high, it can cause 'vapour lock'.

AIR/FUEL RATIO (stoichiometric ratio): This ratio characterises the respective fuel and combustive (air intake) quantities necessary for theoretically ideal combustion. In practice, the engine tuner will usually ensure that the air/fuel ratio corresponds to a value between 1.10 and 1.20, or the theoretical value in relation to the real value.

SUPERETHANOL: a fuel that contains from 65 to 85% ethanol (in volume), depending on the season of the year.