# ELF MOTO 4S-GP

*"Unleaded competition fuel for 4-stroke Motorcycle racing"*


***Using pure bases, our formulas guarantee naturally stable, long-lasting properties, consistent from one production batch to another. This search for constant and optimum quality gives you first class performance, in conformity with official regulations.***

## Use

- **ELF Moto 4S-GP** is an unleaded fuel for 4-stroke engines functioning at high and very high speeds, exclusively for use in Motorcycle racing.
- Complies with FIM 4-stroke regulations.
- Optimised within the limits of FIM regulations, **ELF Moto 4S-GP** combines greater power and impeccable reliability with maximum performance tuning.
- Directly drawn from ELF's experience in 4-stroke MotoGP and Superbike/Supersport, **ELF Moto 4S-GP** is used by the factories and top teams, with regular wins in national and international Supersport championships.
- **ELF Moto 4S-GP** offers neutral tuning with regard to atmospheric conditions and altitude. This means the engine management can be adjusted from one weekend race to another.
- Particularly suited to competitions like:
  - MotoGP
  - Superbike/Supersport

## Characteristics

| | | Typical data | FIM 4-stroke regulations |
|---|---|---|---|
| **OCTANE NUMBER** | RON | 100 | 95 to 102 |
| | MON | 88 | 85 to 90 |
| **DENSITY** | kg/l at 15°C | 0.725 | 0.720 to 0.780 |
| **OXYGEN** | % m/m | 2.6 | 2.7 max |
| **AIR/FUEL RATIO** | | 14.25 | |
| **VAPOUR PRESSURE** | Bar at 37.8°C | 0.530 | 0.900 max |
| **DISTILLATION (°C)** | FBP °C | 147 | 215 max |
| | % vol. at 70°C | 40 | 15 to 50 |

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|---|---|---|---|
| | % vol. at 100°C | 65 | 46 to 71 |
| **SULPHUR** | mg/kg | <10 | 150 max |
| **LEAD** | g/litre | <0.005 | 0.005 max |
| **DIOLEFINS** | % vol. | <0.3 | 1 max |
| **BENZENE** | % vol. | <0.1 | 1 max |
| **NCV** | Kcal/L | 7350 | |

## Properties

| Fuel characteristics | → | Technical gains | → | Engine benefits |
|---|---|---|---|---|
| **Oxygen content** set to FIM upper regulatory limit | → | Natural **booster** effect<br><br>High latent heat of evaporation helps **cool** mix before combustion<br><br>Greater **filling capacity** through cooling of load | → | **Spontaneous power gains (without special tuning)**<br><br>**Power gains after optimisation of ignition sequence**<br><br>**Excellent engine response in transition phase** |
| Additive for **valve anti-shrink** | | Protection of **valve seats** | | **Better mechanical resistance and cylinder head sealing at high speeds with high compression ratios** |
| Strong **density** (upper regulatory limit) | → | Strong energy content of fuel | → | **Significant improvement in filling compared to traditional fuel** |
| Selection of the **best compounds** in the **oxygenated** and **olefin** families | → | **High combustion speed** for optimised cycle yield at very high speeds | → | **Better engine speeds** |
| Very low **benzene** and **sulphur** content | → | Harmless | → | **No special precautions for use**<br><br>**ELF MOTO 4S-GP respects both the environment and health** |

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## Recommendation

- **ELF Moto 4S-GP** provides significant gains in power and reliability, with no fine-tuning.
- To get the full benefit of this product, the engine mapping must be optimised (Air/Fuel ratio, ignition sequence).
- **ELF Moto 4S-GP** must not be used in 2-stroke engines (risk of breaking engine).

## Storage

To preserve its original properties and comply with the Health and Safety rules pertaining to fuels, **ELF Moto 4S-GP** 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

**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.

**AIR/FUEL RATIO (stoichiometric ratio):** This ratio characterizes the respective fuel and combustive (air intake) quantities necessary for ideal combustion in theory. In practice, most of the time, the engine tuner will make sure that the air/fuel ratio corresponds to a value between 1.10 and 1.20, or the theoretical value in relation to the actual value.

**OLEFINS AND DI-OLEFINS:** These unsaturated hydrocarbon compounds (double carbon-carbon bond) do not exist in natural form; they are found in petroleum fractions from cracking facilities.
Thanks to the reactivity of their double bond(s), these molecules have particularly high 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.

**NET CALORIFIC VALUE (NCV):** Calculated per litre or kilogramme, this energy represents the amount of heat released by the combustion of one litre (or kilogramme) of fuel. This value characterizes the fuel's energy content and can be considered on first estimate as the energy supplied to the engine for conversion into engine power.
The higher the fuel NCV, the more the engine is likely to develop power.