



Product Data Sheet

ESSO UNLEADED AUTOMOTIVE GASOLINES

Esso carefully blends and tests its gasolines to ensure that the life of your gasoline engine is optimized. Gasoline quality varies between different refiners primarily due to the addition of proprietary additives. Esso gasolines are formulated with the life and performance of your engine in mind.

The main performance characteristics of a gasoline are determined by its antiknock quality (smooth burn), its volatility (ignite readily, form a combustible mixture), and its detergency (protect the fuel delivery system).

Quality control plays an important role in ensuring that the customer receives the best product. Esso gasoline is formulated and distributed with strict quality control guidelines to ensure that you will receive a top quality product.

Esso fuel products are the result of decades of intensive research and development. Our commitment to outstanding technical excellence and quality control makes Esso the best choice for your fuel and lubricant needs.

Performance Features

Octane Number

The octane number of a gasoline is a measure of that gasoline's resistance to pre-detonation, or knock. A higher-octane gasoline has a greater resistance to knock, thus providing your high-performance engine with increased power due to a "smoother burning" product.

Esso currently manufactures its gasoline with three different octane levels. The different formulations of gasoline are Esso Regular, Extra, and Supreme. They are each formulated to a minimum octane level of 87, 89, and 92 respectively. To understand which grade your gasoline engine requires, please consult your owner's manual.

Ordinarily, your engine will not benefit from using a higher octane than is recommended in the owner's manual. But if your engine knocks or pings at the recommended octane level, you may wish to try a higher-octane gasoline to prevent the knock.

Often, as gasoline engines age, their octane requirement increases due to the buildup of deposits in the combustion chamber. There are also many other factors that influence octane requirements. Some of the more important factors are outlined in the chart below:

Octane Requirement | Octane Requirement

Increases	Decreases
<ul style="list-style-type: none"> • Higher Compression Ratio • Deposit Buildup • Spark Advancement • Increased Load • Increased Air / Engine Temperature 	<ul style="list-style-type: none"> • Richer Air/Fuel Mixture • Increased Humidity • Increased Altitude

Top Quality

It takes more than technical leadership to provide a superior fuel. Not only must quality be designed into the fuel, but the fuel must also be refined and blended properly, and must be guarded against contamination as it moves through the distribution system. Esso has stringent quality control procedures.

Additives

Esso's proprietary additives are precisely injected as each delivery truck is filled at the terminal, guaranteeing that the gasoline will exceed all performance standards and provide additional benefits to you, our customer.

Volatility

Another important performance characteristic of a gasoline is its volatility, or the rate at which it vaporizes at a given temperature. The volatility of a gasoline is important because the liquid gasoline must be mixed with air and vaporized in order to burn in the engine.

The volatility characteristics of a gasoline are of top importance with respect to driveability, startability, and performance. Gasoline with high volatility vaporizes more readily than one with low volatility. In hot weather, gasoline that is too volatile can cause vapour lock and stalling.

Conversely, in cold weather, a gasoline that is not volatile enough may cause hard starting and poor warm-up. In the winter months, for example, a car's engine is extremely cold before startup and the gasoline must have a high enough volatility to be able to vaporize easily in a cold engine environment. Gasoline volatility is carefully balanced on a seasonal and geographic basis to provide the correct vaporization characteristics to ensure proper operation.

Detergency

Detergency is the performance characteristic of a gasoline that refers to its ability to clean and protect the fuel delivery system, including the carburetor or fuel injectors, intake valves and intake port areas. A gasoline detergent is fundamentally like a household detergent; it is a molecule that affixes itself to dirt particles. As gasoline passes through a car's engine, the molecule helps clean away the dirt particles and prevents harmful deposit build-up.

Esso Research Leads the Way

Esso's Research Department works with the gasoline engine industry to understand the changing needs of new engine technology. We are continually working with new fuel formulations and additives to provide fuel that meets or exceeds the requirements of evolving engine and emissions technology.

Need to Know More?

Additional information about gasoline is available from the Esso Technical Support Line at 1 800 268-3183.

