



The LPG basics

- a responsible source of energy





THE ACCIDENTAL DISCOVERY

LPG was identified for the first time in 1910. Back then, the American chemist Dr. Walter O. Snelling found out that petroleum, as well as gasoline, diesel and heating oil, also contains LPG.

The story goes that Snelling more or less discovered LPG by coincidence – and because of a complaint. He was one of the country’s few PhDs and known as a persistent problem solver. Therefore, a discontented car owner came to Snelling to share his frustrations.

When the motorist filled the tank of his Ford Model T, he wondered why half of the gasoline was suddenly gone by time he got home. In Snelling’s opinion, that mystery needed to be investigated, and he discovered that part of the gasoline turned into vapour – and that is the part we now know as LPG.



It is the backbone of cooking, heating, transport and industry for millions of people worldwide. It is an incredible upgrade to efficiency, air quality and climate friendliness compared to many traditional fuels. And it is known under the nickname LPG. In this brochure, you will get to know this a bit better – Liquefied Petroleum Gas.

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THE OLYMPIC TORCH

The Olympic flame is an iconic symbol of the Olympic Games – fuelled by LPG. With this fuel, it is safe and easy for the bearers to carry the torch around on its journey before reaching the stadium. Moreover, using LPG also ensures a strong and visible flame that burns cleanly. That makes it a friend of both the spectators and the environment – the former can easily see it and the latter do not suffer from heavy emissions.



What is LPG?

DEFINITION

It is a fact that LPG is a gas. Actually, it is an abbreviation of **Liquefied Petroleum Gas**. At first, this name might seem a bit contradictory. How can something be both a gas and liquid? The former can fly in the air while the latter can splash in a pool. But as you will learn in this brochure, both the name and the gas itself actually make really good sense.

At normal temperature and pressure – as in your living room or garden – you will meet LPG as a gas. But when it is either **cooled down or put under pressure**, it changes into a liquid. Exactly the type of liquid that is filled onto the cylinders you use for your BBQ in the summer. However, as soon as the liquid leaves the cylinder – e.g. to turn your spareribs into a feast – it returns to normal temperature and pressure and therefore turns into a gas again.

Transforming a gas to a liquid has many advantages. To sum it all up, LPG is in many ways a truly responsible source of energy. Before we get to the details, let us highlight a feature or two that characterise LPG and its outstanding qualities.



THE FAKE SMELL

The smell of gas is 100% fake. In itself, LPG does not smell, and it can therefore be very difficult to detect a leak. To solve the problem, an artificial smell is added to the odourless gas. That makes it easy for every human nose to function as a gas detector.



CHARACTERISTICS

LPG is a **fossil fuel**, just like coal, natural gas and crude oil. Unlike the others, LPG never occurs on its own, and you will only be able to find it naturally in combination with either natural gas or crude oil. As a matter of fact, LPG is actually a **by-product** that only emerges when these fuels are processed. Approximately 60% is produced during the extraction of natural gas, leaving 40% to be recovered through crude oil refinement.

With its origins in place, let us have a look at some of the features that make LPG unique on its own.

- Petroleum gas **shrinks significantly** when it changes from a gaseous to a liquid state. Actually, the volume of the liquid is only 1/250 of the gas, and it is therefore easy to transport lots of energy in a small space.
- The liquid inside a gas cylinder **turns into vapour** when you heat it up, or when you release the pressure by opening the valve. If the cylinder was made of glass, you would be able to see how the change in temperature and/or pressure makes the liquid boil and consequently turns it into vapour.
- LPG vapour is **heavier than air**. In case a cylinder or tank is leaking, the liquid gas will firstly transform into a vapour and secondly spread close to the ground.
- Chemically, LPG is made of **propane, butane or a mix** of the two, and it consists of carbon (C) and hydrogen (H) atoms.

LPG

- multi-purpose energy



LPG provides heating and hot water to homes in Canada



LPG grills sausages and burgers on BBQs in Germany



LPG fuels cars and taxis when functioning as autogas in Korea



LPG secures actresses braids with hair spray in Hollywood



LPG fires the Olympic Torch when it travels around the world



LPG cooks meals for families and communities in India



LPG keeps the milk cold in shop refrigerators in Brazil



LPG puts roofing felt on top of buildings in South Africa



LPG heats up the air that lifts hot air balloons to the sky in Australia

Why choose LPG?

REASON #01:

LPG IS VERY VERSATILE

More than 1,000 different applications run on LPG. Perhaps you then wonder – which applications use this gas as a fuel? The list is long and includes everything from BBQs and hot air balloons to cars and heating. In other words, LPG is an extremely versatile fuel.

All around the world, LPG has become a vital source of energy. **Hundreds of millions of people** not only use but actually depend on the gas – for different purposes but with the same result. It fuels their everyday life.

The global LPG production has exceeded 300 million tonnes/year. About half of the global LPG demand comes from the domestic sector where LPG is used for e.g. cooking and heating. But as mentioned above, the possibilities and applications are almost endless.

The versatility is one of LPG's outstanding qualities – and one of the reasons for choosing it. Without comparison, LPG is one of the most flexible fuels, and it is with good reason that it is often referred to as a **multi-purpose energy**.

REASON #02:

LPG IS EXTREMELY EFFICIENT

LPG is packed with energy. It is **more energy-rich** than other commonly used fuels such as natural gas, petrol, coal and diesel. With a technical term, it has a higher calorific value. This basically means that when you set LPG on fire, the flame temperature will be higher compared to the other fuels. And naturally, a higher temperature translates into a higher efficiency.

In comparison with traditional fuels, LPG can be up to **five times more efficient**. That means that using LPG is one of the best ways to make the most of our planet's resources.

LPG's high efficiency is an unparalleled advantage for both people and planet – and one of the reasons for choosing it. Whereas many traditional fuels deteriorate and lose efficiency over time, LPG always **keeps its powers for good**. Such an indefinite shelf life only makes the high efficiency even better.

REASON #03:

LPG IS EASY TO STORE AND TRANSPORT

It is possible to both store and move LPG in many different ways. That makes it both **flexible and practical** for you to use it.

The **storage options** range from refillable cylinders to tanks either above or under the ground. The cylinders are perfect for cooking and barbecuing, and the tanks do the job for applications that need a bigger and more constant supply of energy.

Along with the wide variety packaging options comes a corresponding variety of **transportation options**. LPG can reach the people who need it either by sea, rail or road. A choice that is only possible because LPG can travel around freely. Unlike natural gas and electricity, it is not tied to any lines, and you can therefore move it without needing a complicated infrastructure setup.

The ease of storing and transporting LPG is the reason why this fuel is accessible to everyone everywhere – and one reason for choosing it. LPG can travel to even the remotest areas, and on islands, in mountains or in communities far away, it might be the only sustainable energy option.



THE DIFFERENT NAMES

LPG is an abbreviation of the gas' English name, Liquefied Petroleum Gas. When this name is translated into Spanish, French and Italian, the word – and consequently also letter – order changes. All three languages use words starting with L, P and G, but in different sequences.

- English > LPG (liquefied petroleum gas)
- French > GPL (gaz de petrole liquefie)
- Italian > GPL (gas di petrolio liquefatto)
- Spanish > GLP (gas licuado del petroleo)



REASON #04:

LPG IS ENVIRONMENTALLY FRIENDLY

By nature, LPG is an **environmentally friendly fuel**. That is a fact. If you for instance look at its carbon footprint – the sum of its greenhouse gas emissions – LPG stands out as one of the cleanest conventional fuels. Unquestionably, that is something the environment likes.

As a specific example, let us focus on its emission of CO₂ – a greenhouse gas that is often pointed out as a significant enemy to the environment. But using LPG can make a positive difference on the bottom line. In comparison, LPG **emits about 50% less CO₂ than coal, 20% less than heating oil and 59% less than wood**. And you will find similar figures if you look at other greenhouse gases.

However, LPG is not only good on its own. It is also regarded as an important vehicle in the journey towards a viable and clean energy cycle. Together with natural gas, it can **pave a sustainable way forward**, both directly and in combination with renewables like wind and solar energy.

To make LPG's good qualities even better, a new product has entered the market: **bio LPG**. A fuel that can either be used instead of or mixed with conventional LPG. It functions just like the LPG you know, but it is extracted from food waste or vegetable oils – and consequently emits even less CO₂.

LPG's environmentally friendly nature is improving indoor and outdoor air quality – and one of the reasons for choosing it. Even if luck runs out and a leak occurs, it is still a textbook example. It will not pollute the soil, water or underground in the area.

LPG vs other fuels

Compared with other fuels, LPG is an efficient and responsible choice. It only takes a little LPG to get a lot of energy, and the emission of CO₂ – and other greenhouse gases – is significantly lower. Below, you see a comparison with coal, heating oil and wood. Coal and heating oil are typically used for heating houses, and wood is traditionally used for cooking in developing countries. And in all cases, LPG is a great alternative.



180 kWh

That is the annual amount of energy it takes if you want to make 5 litres of water boil every day. This corresponds to:



13 kg of LPG



25 kg of coal



91 kg of wood



Compared to **coal**,
the carbon footprint of
LPG is 50% lower



Compared to **heating oil**,
the carbon footprint of
LPG is 20% lower



Compared to **wood**,
the carbon footprint of
LPG is 59% lower

The information in this brochure is used by courtesy of World LPG Association.

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