All about AdBlue®

L'AdBlue®,
an effective solution
to reduce nitrogen oxide emissions from Diesel vehicles and improve air quality.

TotalEnergies

Spurred by environmental issues, changes in technology and practices, road transportation is shifting gears. One of these changes includes reducing polluting emissions.
AdBlue®, a urea-based solution that reduces nitrogen oxide (NOx) emissions from Diesel vehicles, is an example of the trend.

> **“There is no universal mobility solution and there will never be one. Each type of energy has its own advantages and drawbacks and will be used for the applications it’s best suited for. Diesel engines will continue to be used, and AdBlue® contributes to make them kinder to air quality.”**

This brochure will give you a better understanding of what AdBlue® is, and related products being developed by TotalEnergies.

Happy reading!

New Mobilities and Marketing Division
TotalEnergies Marketing Services

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ESSENTIALS

What AdBlue® does?

Most countries and regions have enacted air quality standards that regulate vehicle pollutant emissions.

In Europe

Since the Euro IV standard took effect in 2006, **new Diesel trucks and other Heavy-Duty vehicles** have come with a nitrogen oxide (NOx) aftertreatment system. Since September 2014 and the introduction of the Euro 6 standard, **Diesel passenger cars** have also been equipped with similar systems.

Most car manufacturers use a Selective Catalytic Reduction (SCR) system to meet emission standards. **AdBlue® is what makes SCR after treatment technology work.**

Outside Europe

Other countries are enacting similar standards that often lead to adopting SCR technology. The United States, for example, has the Tier 2 and Tier 3 emission standards and China has the CN4, CN5 and CN6 emission standards.

Did you know?

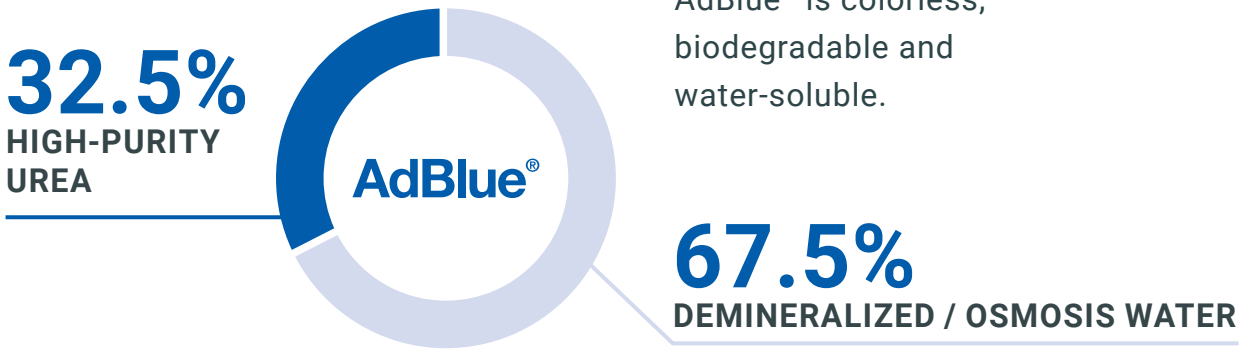
Europe standards for trucks, buses, motor coaches and other Heavy-Duty vehicles are numbered using Roman numerals (Euro IV, V, VI). Standards for passenger cars are denominated in Arabic numerals (Euro 4, 5, 6).

ESSENTIALS

What AdBlue® is?

AdBlue® is a Diesel exhaust fluid for vehicles equipped with SCR technology. Made up of 67.5% deionized water and 32.5% high-purity urea, it meets the requirements of the ISO 22241 standard.

AdBlue® is stored in an auxiliary tank separate from the Diesel fuel tank.



Did you know?

- The urea used for AdBlue® is a high-purity synthetic product, usually made from natural gas and also used in chemical fertilizers and plastics.
- AdBlue® has the symbol ® because it is a **registered trademark of the German Association of the Automotive Industry (VDA)**. The VDA makes sure that product quality standards are met.

ESSENTIALS

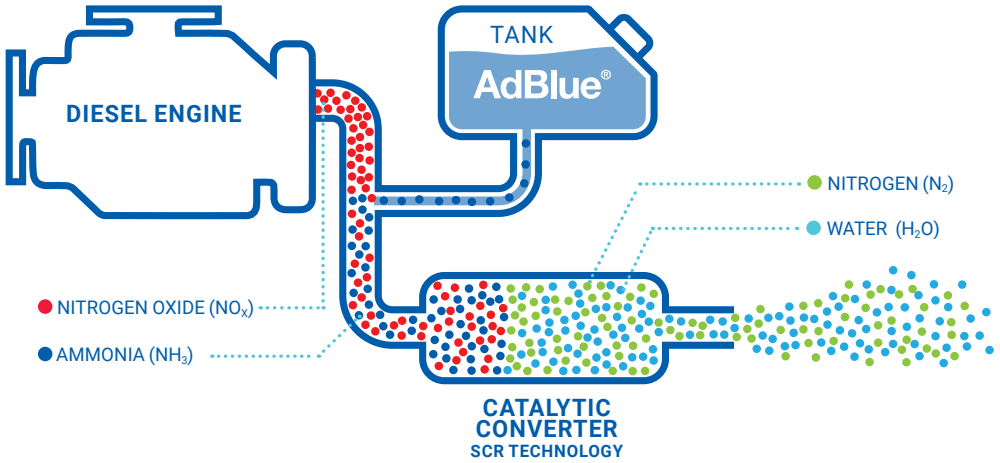
AdBlue® & SCR: a winning combination against pollution

How does it work?

When combined with SCR technology, AdBlue® converts nitrogen oxide (NOx) emissions from Diesel engines into harmless nitrogen and water vapor.

A three-step process

1. AdBlue® is injected into the exhaust pipe upstream of the SCR catalyst.
2. Urea breaks down into ammonia when exposed to hot exhaust gases.
3. Nitrogen oxide from the engine is converted to nitrogen (a harmless gas, the main component of the air we breathe) and to water vapor, through a chemical reaction with the ammonia in the SCR catalyst.



! Caution

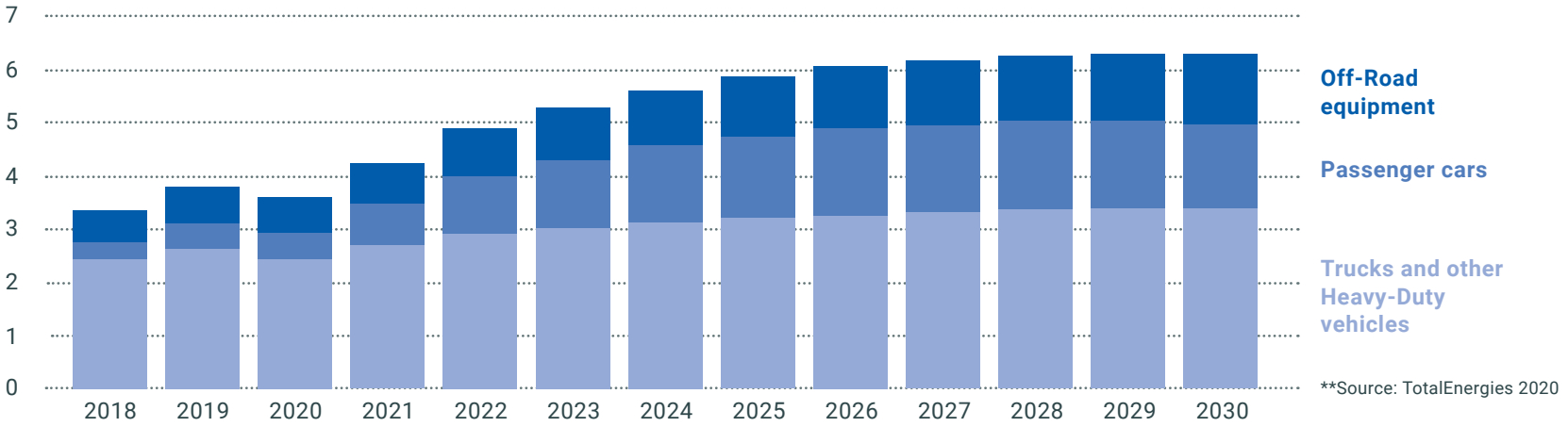
AdBlue® must be poured into its own tank, not the Diesel fuel tank.

ESSENTIALS

The AdBlue® market in Europe

The AdBlue® market for trucks and other Heavy-Duty vehicles has grown by leaps and bounds since 2006. New standards are now broadening it to include passenger cars and Off-Road equipment*. Those two categories are forecast to make up 40% of the market by 2030. Its sales volume is expected to double in 10 years, from 3 million cubic meters to 6 million.

*Estimated growth in AdBlue® consumption (million cubic meters)** to 2030*



**Source: TotalEnergies 2020

Outside the Europe

AdBlue® is also growing in North America, in Asia — especially China — and certain in African countries.

*Did you know?

The term “Off-Road” refers to mobile machinery not designed to travel on roadways. Examples include farm machinery and construction and handling equipment.

IN PRACTICE

When to fill up with AdBlue®?

Passenger cars

An instrument panel warning light goes on, indicating that the AdBlue® tank will need to be filled soon. You can still drive another 2,400 kilometers after the light comes on. At least four liters have to be added to the AdBlue® tank to turn the light off.

Trucks and other Heavy-Duty vehicles

Heavy-Duty vehicles have an AdBlue® gauge to let drivers know how much AdBlue® is left in the tank.

AdBlue® is available:

- **From pumps at some TotalEnergies stations (Heavy-Duty vehicles and/or passenger cars) and AS24 stations dedicated to Heavy-Duty vehicles.**
- **In canisters at all TotalEnergies shops.**

Passenger cars and Heavy-Duty vehicles have different pumps.

- Trucks and other Heavy-Duty vehicles have special, very high-volume pumps and a specific system to open the nozzle. The pumps are located in a dedicated lane.
- Passenger car drivers must use the pumps reserved for them to fill up with AdBlue®. They can also use the canisters sold at shops.

2

IN PRACTICE

Where to find the tank?

It’s easy to spot the AdBlue® tank: its cap is often blue. However its location, can vary by vehicle make and model.

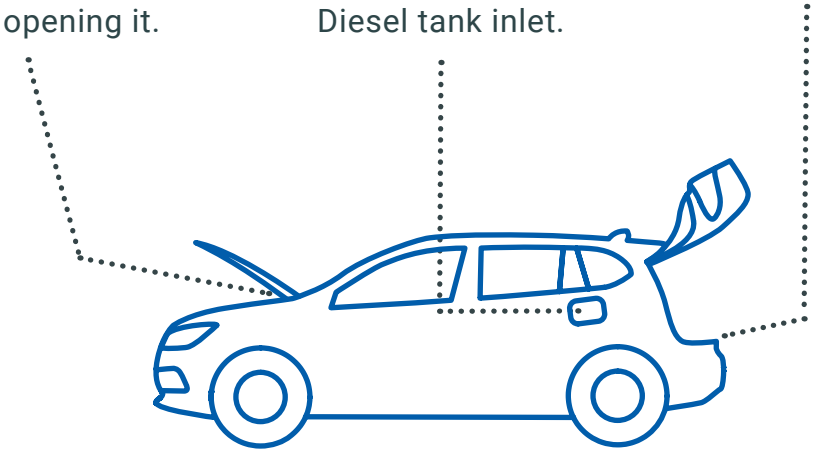
Where to look for the tank?

Passenger cars

Under the hood:
Check to make sure the hood isn’t too hot before opening it.

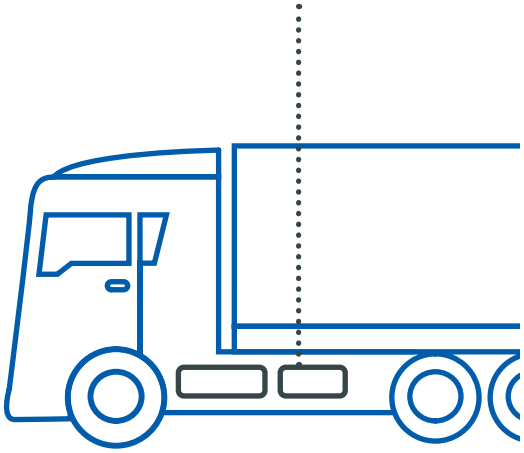
On the side of the car:
By the fuel tank cap, right next to the Diesel tank inlet.

In the trunk:
Underneath the bed or on the side.



Trucks and other Heavy-Duty vehicles

The tank is located on the truck chassis, next to the Diesel fuel tank.



Did you know?

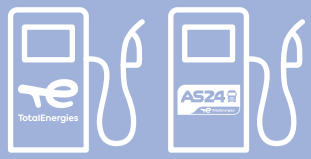
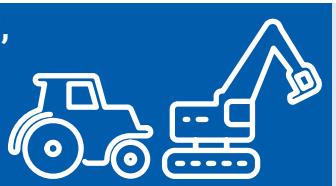
Passenger cars have AdBlue® tanks holding anywhere from 7 to 25 liters. Check the owner’s manual for this information.

IN PRACTICE

AdBlue® at TotalEnergies

TotalEnergies offers AdBlue® in different formats to meet customer needs:

- At the pump for Heavy-Duty vehicles, and we're now gradually adding pumps for passenger cars and commercial vehicles in our E.U. network.
- In bulk, in 1,000-liter IBC or 208-liter drums for business customers.
- In five or ten-liter canisters for all customers.

	Pump	5L/10L canisters	208L drums	1,000L IBC	Bulk delivery
Passenger cars and commercial vehicles 					
Trucks, buses, garbage trucks and other Heavy-Duty vehicles 					
Farm machinery, construction equipment and other Off-Road equipment 					

2

IN PRACTICE

AdBlue® at the pump

TotalEnergies and AS24 have an extensive network of AdBlue® pumps in Europe.

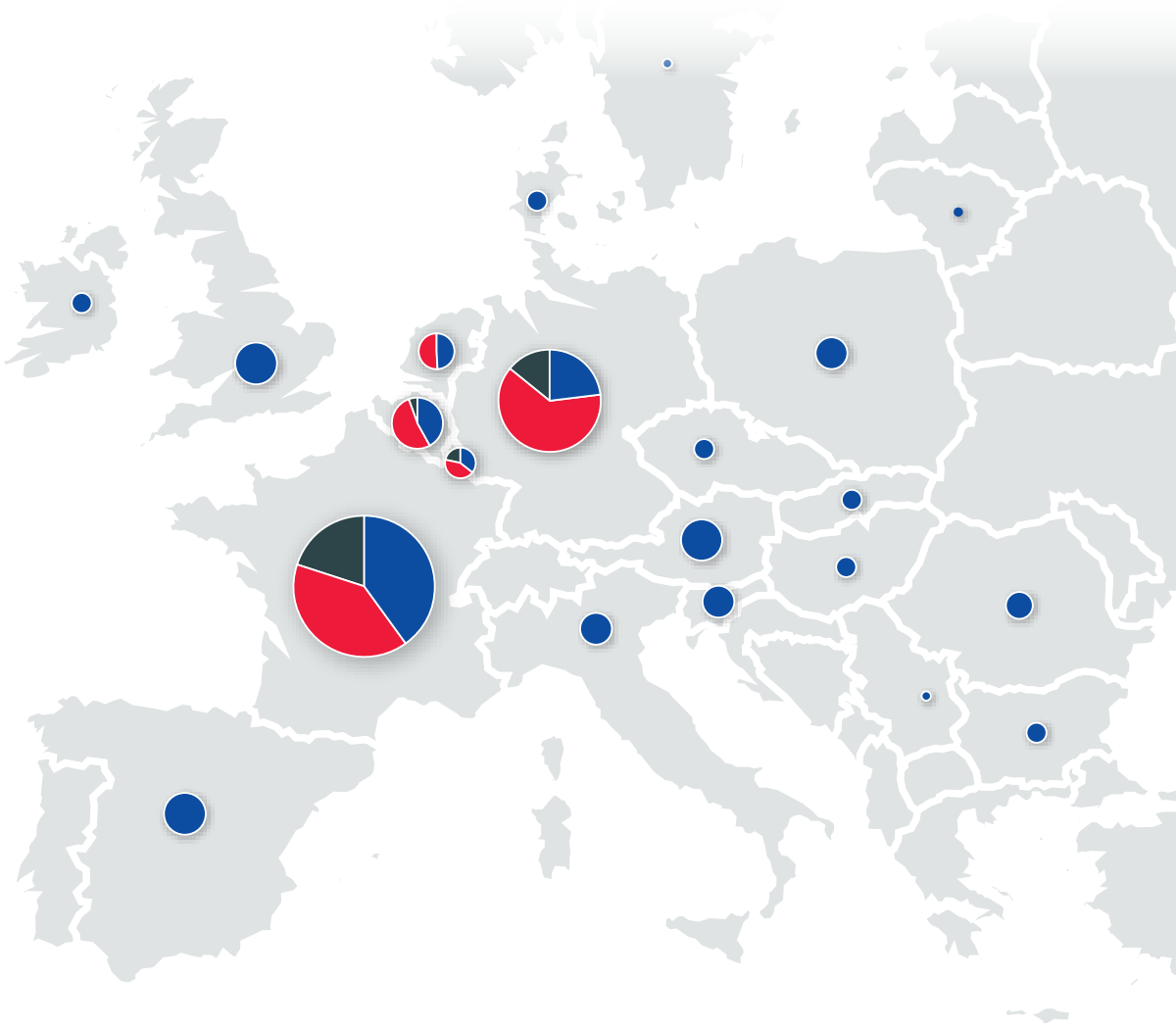
TotalEnergies

990 stations
with pumps for
Heavy-Duty vehicles

496 stations
with pumps for
passenger cars

AS24 TotalEnergies

960 stations
with pumps for
Heavy-Duty vehicles



January 2022 figures

IN PRACTICE

AdBlue® canisters

TotalEnergies sells five- and ten-liter canister with a flex spout for a better customer experience.

Did you know?

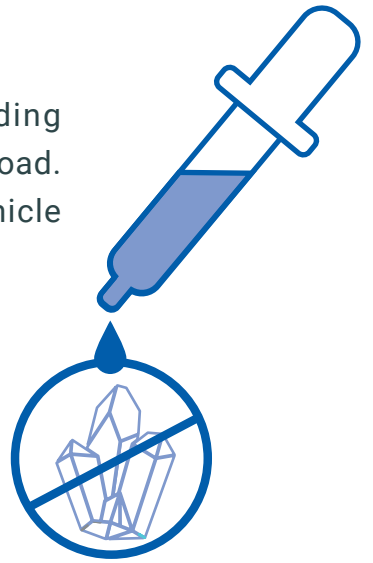
Passenger cars need at least a four-liter fill to turn off the AdBlue® warning light.

2

IN PRACTICE

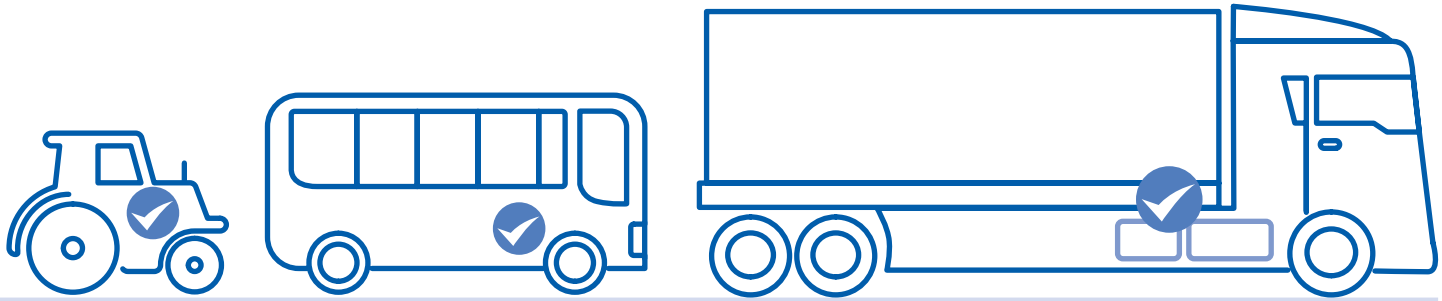
ClearNOx®, a TotalEnergies technology that takes it up a notch

Vehicles can run into problems **with plugging of their SCR system** depending on how they're used, especially if they make frequent stops or are running at low load. Caused mainly by cyanuric acid crystals, plugging can eventually bring the vehicle to a complete standstill.



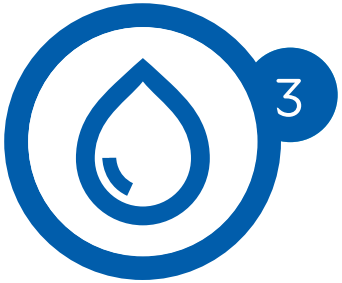
TotalEnergies developed and patented ClearNOx® to solve this problem. Formulated using AdBlue®, ClearNOx® is a preventive solution that keeps crystals from forming in the SCR system.

Using it continuously keeps SCR systems working efficiently.



Note

ClearNOx® is primarily for **business customers** operating buses, trucks, farm machinery, construction equipment and other Heavy-Duty vehicles.



FIND OUT MORE

User tips

Conditions de stockage de l'AdBlue®

- **AdBlue®** must be properly sealed and **stored indoors,** in a clean spot away from direct light.
- **Storage temperatures must remain between -5° C and 30° C.**
  Above 30°C, AdBlue® starts to break down; below -5°C, it freezes. The vehicle's automatic warm-up system restores it to a liquid state 20 minutes after ignition. The vehicle can be driven as usual during those 20 minutes.
- Under proper storage conditions — sealed, at a temperature below 25°C — AdBlue® has a shelf life of 18 months.

Storage temperature	Minimum shelf life
< 10°C	36 month
< 25°C	18 month
< 30°C	12 month
< 35°C	6 month

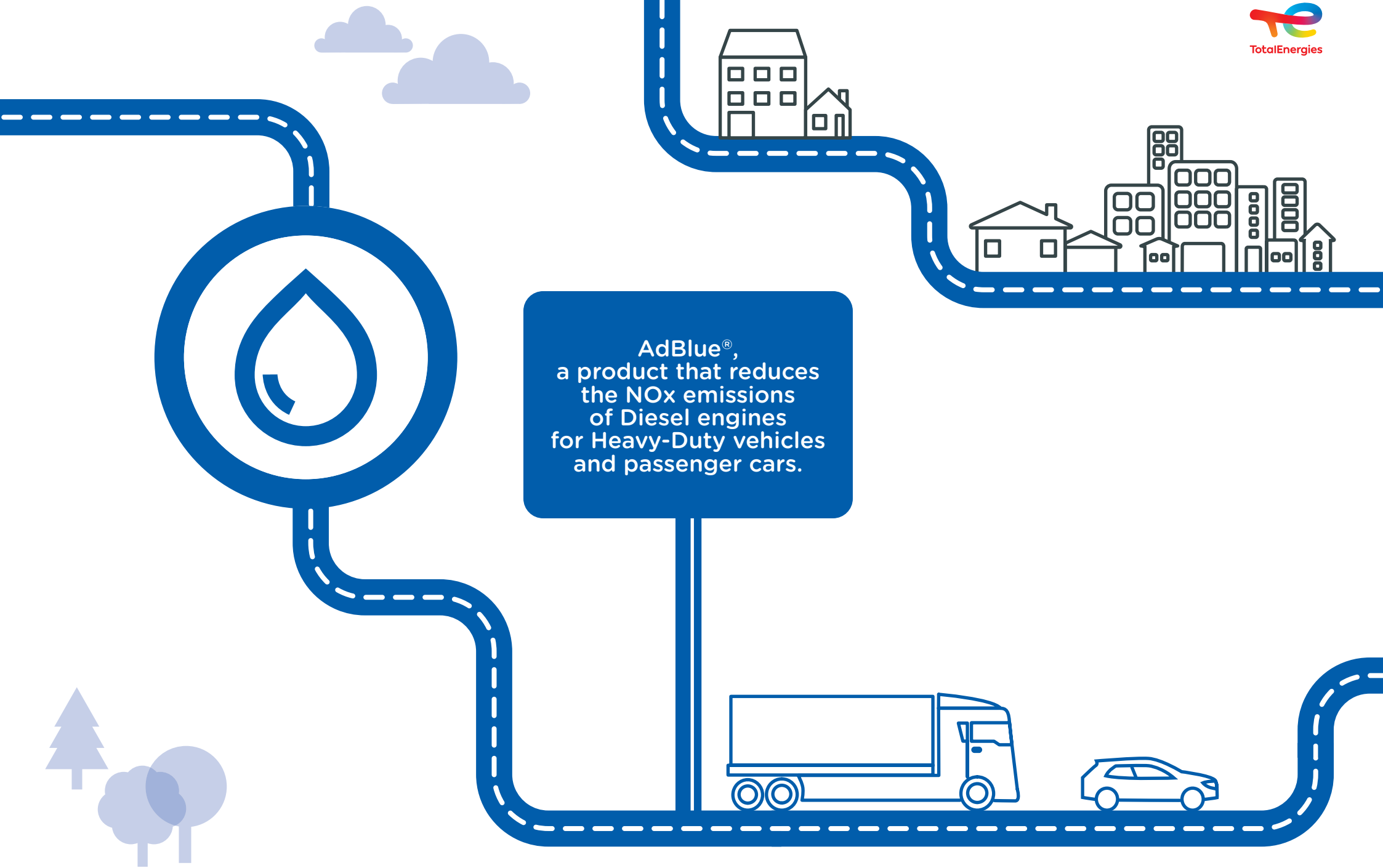
Precautions

- AdBlue® is considered non-hazardous. However, it can corrode certain materials, especially paint and aluminum alloys. If you spill some on your vehicle, rinse it off thoroughly using water.
- If fluid splashes onto your clothing or skin, rinse with water to prevent urea crystals from forming.

! Note

Never mix AdBlue® with water or other substances, especially Diesel fuel. This could seriously damage the SCR system and require costly repairs.

Likewise, never add AdBlue® to the Diesel tank; you could very quickly damage the fuel injection system.


AdBlue®,
a product that reduces
the NOx emissions
of Diesel engines
for Heavy-Duty vehicles
and passenger cars.

TotalEnergies Marketing Services

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