***Fuel oil***

It is used primarily for powering engines, generating heat, and producing electricity.

**Types of Fuel Oil**

1. **Heavy Fuel Oil (HFO)**:
   * **Viscosity**: High
   * **Usage**: Marine engines, industrial boilers
   * **Characteristics**: Contains impurities like sulfur, requiring treatment before use.
   * Singapore Fuel Oil 180 CST (Platts)
2. **Light Fuel Oil (LFO)**:
   * **Viscosity**: Lower than HFO
   * **Usage**: Domestic heating, smaller industrial applications
   * **Characteristics**: More refined, contains fewer impurities.
   * NY Harbor ULSD
3. **Intermediate Fuel Oil (IFO)**:
   * **Viscosity**: Between HFO and LFO
   * **Usage**: Marine applications
   * **Characteristics**: Blend of HFO and distillate fuels.
   * FO 380 CST FOB Med Cargoes
4. **Diesel Fuel**:
   * **Viscosity**: Lower, similar to kerosene
   * **Usage**: Transportation (diesel engines), some heating applications
   * **Characteristics**: Higher refining level, suitable for engines and clean burning.
   * NY Harbor ULSD (Ultra-Low Sulfur Diesel)

The higher the centistoke (cSt), the thicker and more viscous the fluid is.

**Environmental Impact**

* **Emissions**: High levels of sulfur dioxide (SO₂), nitrogen oxides (NOₓ), and particulate matter when burned.
* **Regulations**: Increasingly stringent environmental regulations are pushing for cleaner alternatives or the use of scrubbers and other pollution-control technologies.

**Fundamental risks**

* Significant contributor to pollution.
* Requires careful handling+storage due to its viscosity and potential for contamination.

**Crude oil (a.k.a. petroleum) Inventories**

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A barrel of crude oil

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* About 19 to 20 gallons of [motor gasoline](https://www.eia.gov/energyexplained/gasoline/)
* 11 to 13 gallons of [distillate fuel](https://www.eia.gov/tools/glossary/index.php?id=Distillate%20fuel%20oil), most of which is sold as [diesel fuel](https://www.eia.gov/energyexplained/diesel-fuel/)
* 3 to 4 gallons of jet fuel

***Gasoline***

**Gasoline—a petroleum product**

Gasoline is mainly used in vehicle engines.

Most of the finished motor gasoline now sold in the United States contains about 10% [fuel ethanol](https://www.eia.gov/tools/glossary/index.php?id=fuel%20ethanol) to meet the requirements of the [Renewable Fuel Standard](https://www.epa.gov/renewable-fuel-standard-program), which is intended to reduce greenhouse gas emissions.

**Gasoline varies by grade**

Three main grades of gasoline are sold at retail gasoline refueling stations:

* Regular
* Midgrade
* Premium

Some companies have different names for these grades of gasoline, such as *regular*, *unleaded*, *mid-grade*, *medium*, *super*, *premium*, or *super premium*, but they all indicate the [octane rating](https://www.eia.gov/energyexplained/gasoline/octane-in-depth.php), which is the antiknock property of gasoline. (No grade of motor gasoline now sold in the U.S. contains [lead](https://www.eia.gov/energyexplained/gasoline/gasoline-and-the-environment-leaded-gasoline.php).) The lowest octane rating gasoline is usually the least expensive. Vehicle manufacturers recommend the grade of gasoline for use in each model of their vehicles.

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Diesel fuel

Diesel fuel is the common term for the [distillate fuel oil](https://www.eia.gov/tools/glossary/index.php?id=Distillate%20fuel%20oil) sold for use in motor vehicles

Most freight and delivery trucks as well as trains, buses, boats, and farm, construction, and military vehicles, and some cars and light trucks have diesel engines. Diesel fuel is also used in diesel-engine generators to generate electricity

Diesel fuel is ULSD (ultra-low sulfur diesel) because sulfur is toxic.

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***Naphtha***

Stripped from crude oil to produce more gasoline