



# The different types of product transported by transmission pipelines.

## FAST FACTS

### Oil and natural gas



1

Canada has the world's third-largest proven oil reserves, after Saudi Arabia and Venezuela, and the fifth largest reserves of natural gas.



2

Oil sands are a mix of sand, water, clay, and bitumen – heavy crude oil which is too thick and needs to be diluted or heated to be pumped or to flow.



3

There are thousands of consumer products made from crude oil, including carpeting, chewing gum and eyeglasses.

The contents of a barrel of crude oil may seem straightforward – a dark, thick substance used for heat and fuel. But did you know that some crude oil is thin and almost colourless? In fact, there are many different grades and varieties of crude oil – with vast differences in colour, weight and volatility.

Crude oil is made of plant or animal fossils that have been compressed and slowly heated over millions of years. Crude oil deposits are found all over the world – where the crude oil is extracted has an impact on its characteristics, including colour.

While there are many types of crude oil, the oil and gas sector uses these important characteristics to classify them – density (heavy crude versus light crude), viscosity (the degree to which the crude oil resists flow) and sulphur content (sweet crude is low in sulphur and sour crude is high in sulphur).

A good example of heavy crude comes from the Alberta oil sands. This region has vast deposits of bitumen, which is a semi-solid form of oil. Its thick and sandy qualities are different than crude oil found elsewhere in Canada, and must be diluted so it can be transported by pipeline.

Despite differences in weight, colour and sulphur content, all types of crude oil are equal when it comes to safe transportation through a transmission pipeline.

#### The role of a pipeline

There are three main types of pipeline that transport the petroleum products needed for life in Canada.

**Gathering pipelines** – Oil or natural gas is gathered from wells and sent to a facility where it's processed or refined.

**Feeder pipelines** – Once the oil is refined or the gas is processed, it's moved through feeder pipelines to large transmission pipelines.

**Transmission pipelines** – These are the large energy highways that deliver products across the country to where people need it, and into USA and Canadian ports for export. These are the pipelines CEPA members operate.

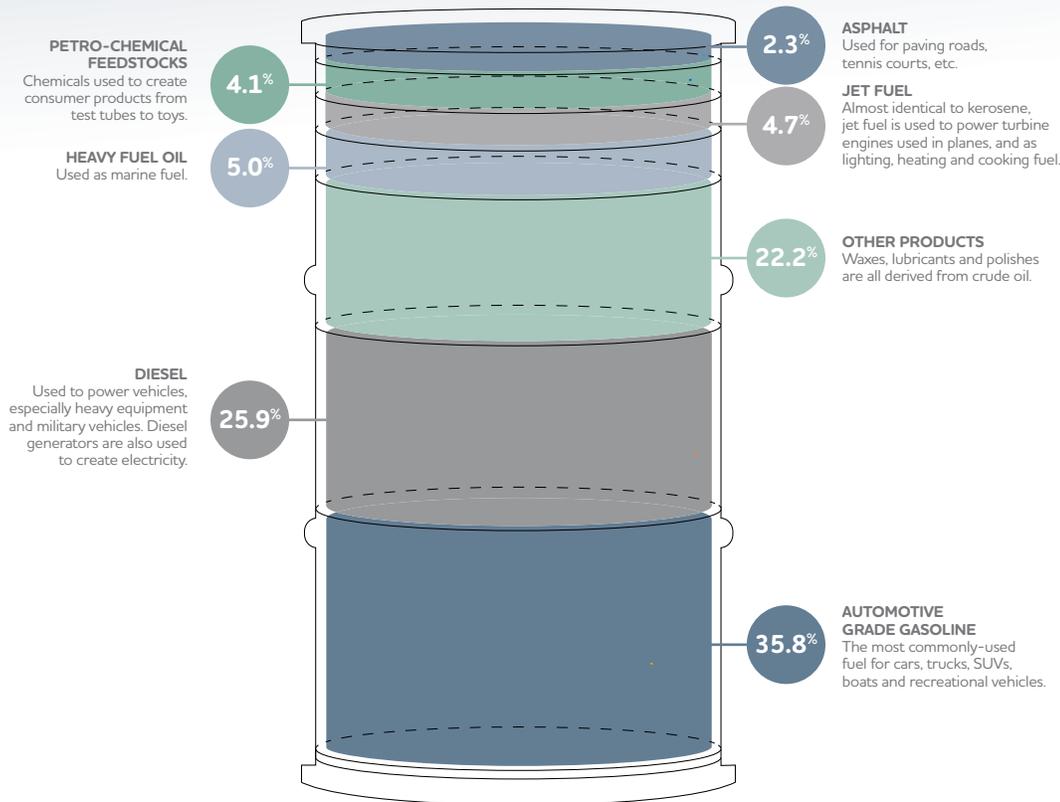




## About Pipelines

### TYPES OF PRODUCT IN PIPELINES

#### What's in a barrel of oil. By percentage:



Source, Statistics Canada: Cansim Table 134-0004

These pipelines transport a wide variety of products:

#### Liquids

Liquids include crude oil, diluted bitumen or natural gas liquids (NGLs), like ethane, butane and propane.

On any given day a pipeline could be used to transport different grades or varieties of crude oil. These pipelines safely transport crude oil to refineries, where the crude oil is converted into

refined petroleum products, from fuel to plastics. In fact, a typical barrel of oil has seven different types of products in it (in the diagram above).

#### Natural gas

Considered the cleanest-burning fossil fuel, natural gas is an abundant resource in Canada.

Pipelines move raw natural gas to facilities where it is processed into natural gas condensate, sulphur, ethane, and natural gas liquids like propane and butane.

#### Bitumen basics

A semi-solid form of crude oil, bitumen needs to be diluted or heated before it is transported by pipeline.

A lighter oil is added to bitumen to make it more viscous and less dense.

The diluted bitumen (dilbit) is similar to conventional crude oil – studies show it is not more corrosive or harmful to pipelines.

# 150 YEAR HISTORY

#### Applying research

Throughout its 150 year history, the Canadian petroleum industry has focused on research to create advancements in technologies, practices and operations. Research has included gaining a better understanding of how crude oil behaves in different environments. This information is critical to helping pipeline companies better prepare to respond in the unlikely event of an emergency.

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