

# Gasoline fuel quality: The looming octane shortage



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*For*

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*By*

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# What is Octane ?

“ A measure of a fuel’s ability to avoid knock”

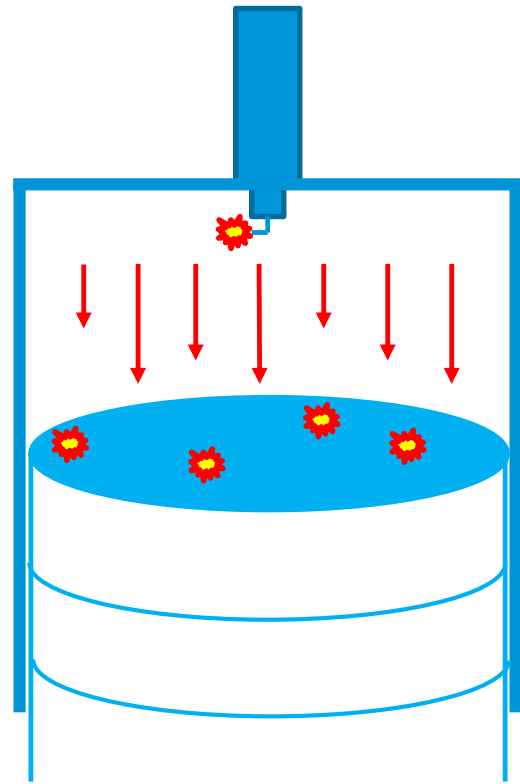
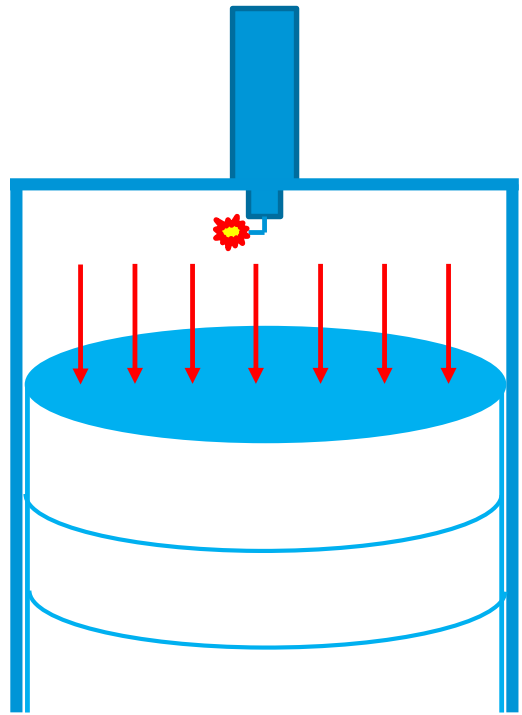
What is knock and why is it bad?

“ A measure of a fuels resistance to detonation”

I thought we wanted the fuel to detonate

“ A fuel exhibiting the characteristics of a branched-chain isomer of octane, especially iso-octane, in its ability to resist knock”

???????

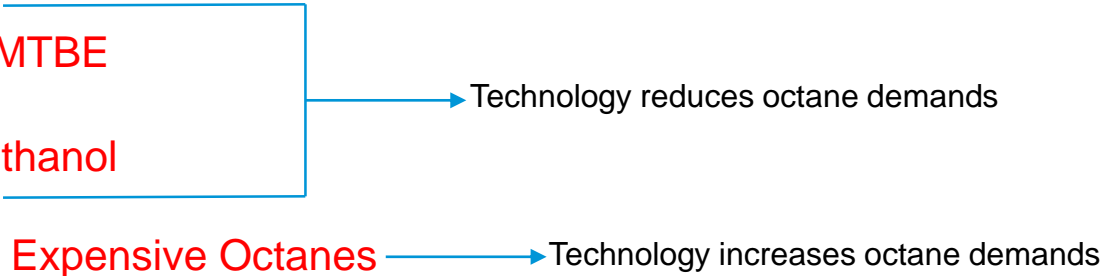


# How is Octane Measured ?

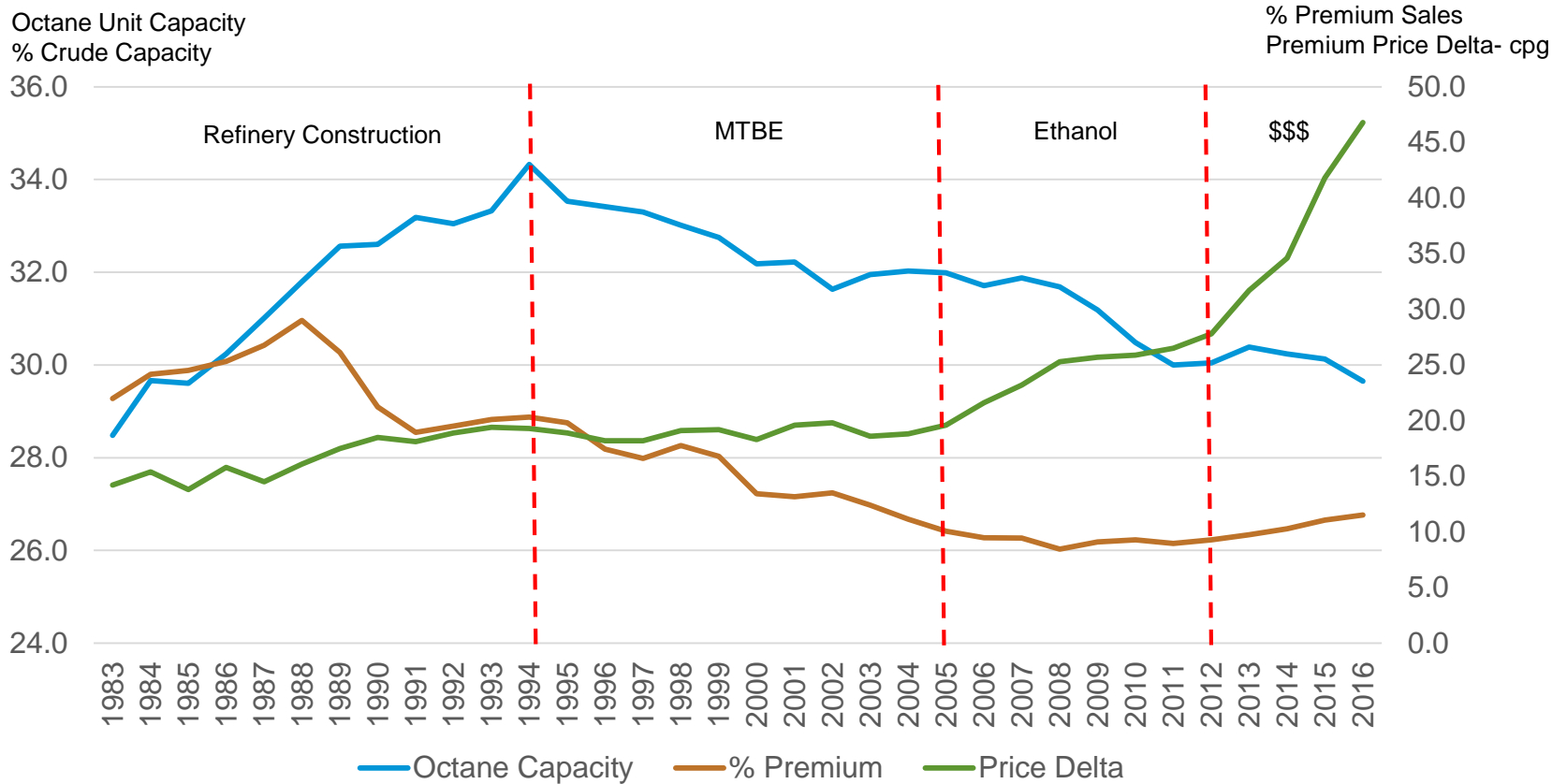
- The subject fuel is burned in a bench scale engine
  - Octane engines are built to provide a wide range of conditions
  - The subject fuel performance is compared to a standard fuel, one of the chemicals in the octane family which is arbitrarily assigned an octane rating of 100
- The subject fuel is burned under two sets of conditions
  - Low severity, meant to simulate acceleration- Research Octane (RON)
  - High severity, meant to simulate high speed driving – Motor Octane (MON)

The octane posted on the pump is the average of RON & MON

# The History of Octane

- 1920's to 1970's- **the Era of Lead**
  - 1980's to early 1990's – **the Era of Refinery Construction**
  - 1990's to 2005 - **the Era of MTBE**
  - 2005 to 2012 – **the Era of Ethanol**
  - 2012 to Present – **the Era of Expensive Octanes**
- Technology reduces octane demands
- Technology increases octane demands
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# The History of Octane



Source: EIA

## Panel Members

- Lynn Westfall – Director, Office of Energy Markets & Financial Analysis, Energy Information Administration
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