



mmt[®] Performance Additive for Octane—A Proven Choice



*Afton Chemical, a leading worldwide supplier of petroleum additive technology, developed **mmt**[®] (methylcyclopentadienyl manganese tricarbonyl) nearly 60 years ago for use as an octane improver. The manganese-based additive has been used successfully around the world — including in North and South America, Europe, Africa and Asia — and continues to gain support in new markets. More than 160 locations in 45 different countries safely and efficiently benefit from the use of **mmt**[®].*

How **mmt**[®] Works

For many oil refineries and markets that are octane short, **mmt**[®] is the octane solution of choice. As the most cost-effective octane enhancer available, it takes only one drop of **mmt**[®] per liter of gasoline to increase octane value by two numbers.

By increasing octane levels, **mmt**[®] contributes to the efficient performance of all types of modern vehicles and to the reduction of both emissions and energy consumption.

Proven Safety in Use

Comprehensive health assessments by International government bodies, such as the US Environmental Protection Agency (EPA) and Health Canada, among many others, have concluded that **mmt**[®] use in gasoline presents no increased risk to human health.

Environmental monitoring has confirmed that the use of **mmt**[®] contributes a negligible amount of manganese to the environment – well below the strictest world safety levels. And because **mmt**[®] is not carcinogenic and not soluble in water, it does not present risk to water supplies.

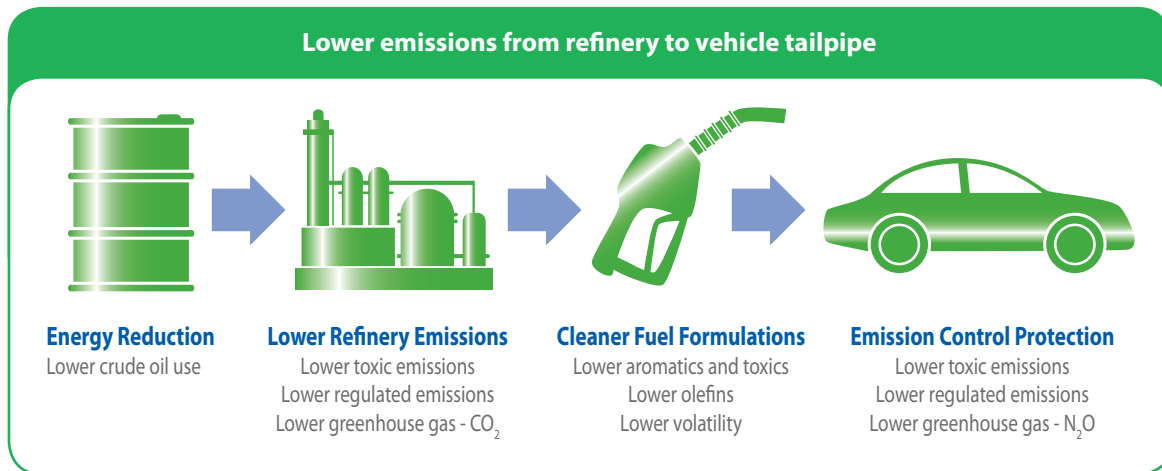
mmt[®] is the only manganese-based fuel additive fully tested, and approved by the US Environmental Protection Agency (EPA) and registered in the European Union under the European Chemicals System (REACH).

Manganese, a key ingredient in **mmt**[®], is the 12th most common element on earth, naturally present in the air we breathe and abundant in many of the foods consumed worldwide, including tea, bread and bananas. Most multivitamin tablets also contain manganese as an essential mineral supplement.

How **mmt**[®] Works

- 1 drop per liter of gasoline
~2 octane number increase
- Saves energy and cost
- Helps lower refinery emissions
- Helps refiners produce cleaner burning gasoline
- Helps lower vehicle emissions

Environmental Benefits



The use of **mmt**[®] enables cleaner burning gasoline – reducing CO₂ emissions by around 3.5% and allowing for up to 3% in energy savings.

The introduction of vehicles fitted with exhaust after-treatment technologies over the past several decades has contributed to cleaner air by reducing vehicle emissions.

High quality fuels that enable introduction of even more advanced emission control technologies, are a key factor in further improving air quality. **mmt**[®] is compatible with these advanced technologies providing protection to catalytic converters and supporting the advancement of clean fuel policies worldwide.

The Afton Story

Afton is a leading worldwide supplier of additive technology to fuel and lubricant industries. Afton manufactures products that enable emission reduction, improve fuel economy and extend equipment life within the transport, industrial and energy sectors. Afton invests over \$100-million per year in R&D, including wide-ranging health and environmental research supporting its products. Afton's corporate headquarters are in Richmond, Virginia, U.S.A. with manufacturing, sales and R&D facilities located worldwide, including Central and South America. **mmt**[®] is a registered trademark of Afton Chemical Corporation.

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