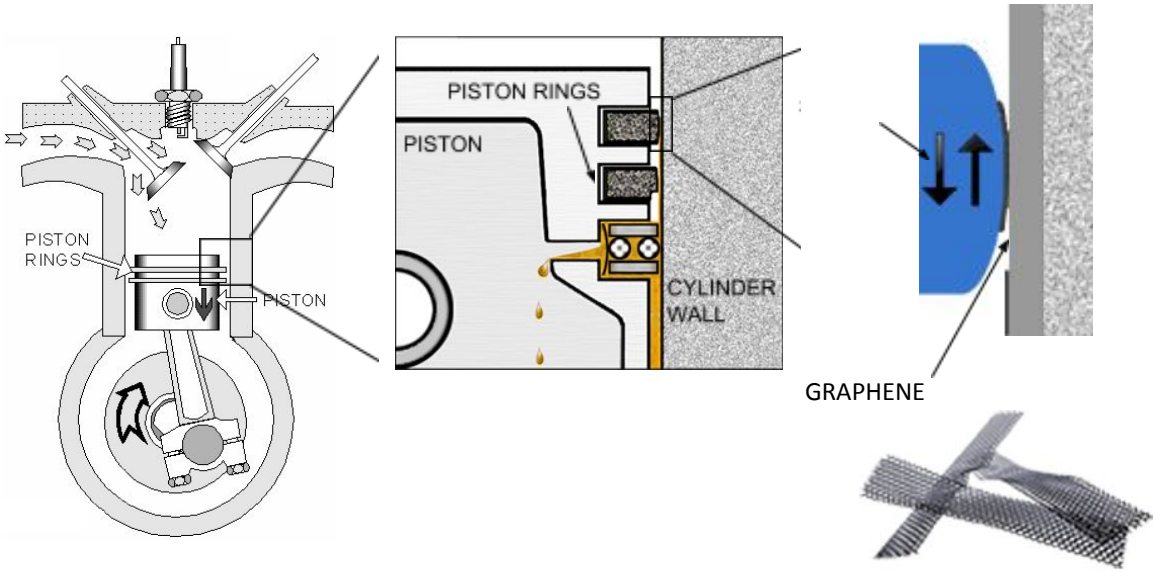
TNANO GRAPHENE MATERIALS

GRAPHENE LUBRICANTS

TYPE: GNP LUBRICANTS

TNANO's Graphene Lubricants are ultra-high purity graphene nano-platelets for use as lubricant additive materials. Graphene enhances the lubricant properties of base engine oil, helping to improve engine performance at various operating temperatures. Graphene-based lubricant additives improve wear resistance, extend engine life, increase fuel efficiency, and increase engine power. With high surface area and high affinity for metal surfaces, graphene nanoparticles enable penetration and coating of wear crevices (surface asperities) forming a thin protective film between moving mechanical parts.



Graphene as lubricant additives bond to metallic surfaces to keep moving parts physically separated under loads, high temperatures and speeds, thus minimizing friction and wear.

Our patent-pending manufacturing method for graphene produces controlled particle size for consistent and predictable qualities such as lubricity, viscosity, and most importantly, stable suspension and dispersion in oil.

FEATURES:

- **Ultra high purity & high uniformity graphene with predictable characteristics**
- **Excellent solution dispersion in oil**
- **Excellent shelf life in oil**
- **Low loading requirements of about 0.025 g (25mg) of graphene per liter of oil**
- **Nano-sized particles won't clog filters**
- **Enhance the properties of conventional and synthetic oil**
  - **Improve lubricity properties**
  - **Increase wear resistance of engine components**
  - **Boost fuel efficiency**

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BENEFITS OF NADDITIVE-3001 IN MOTOR OIL:

TNANO's GNP-LADD251 improves the lubrication and prolongs the use of motor oil in modern engines.

- **Improve oil viscosity index for low to elevated temperatures.**
- **Improve lubricity by reducing friction between moving parts.**
- **Nanoparticles bond to metal surfaces and help to reduce wear.**

Stable Dispersion in Motor Oil

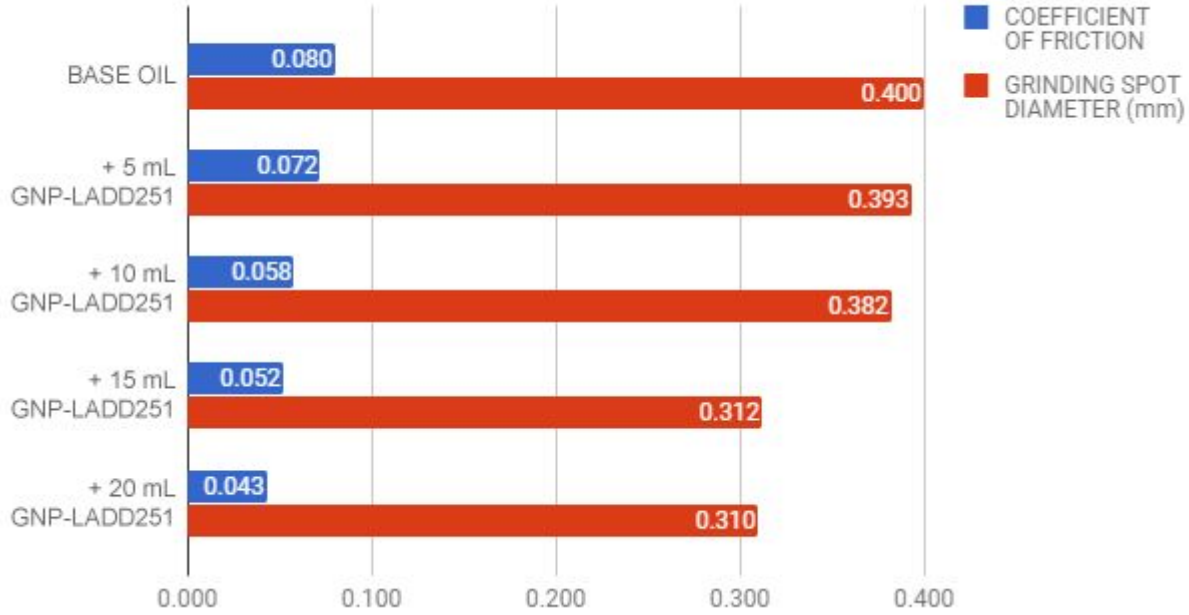
Left: Conventional base oil 10W-30 with 0.050 gram/L concentration of GNP-LADD251 remains uniformly dispersed for over 9 months without precipitation or separation.

Right: Conventional base oil 10W-30.

PRELIMINARY TEST RESULTS OF FRICTION COEFFICIENT

TEST PARAMETERS: 1200 R/MIN @ 75°C & 40KG/F

5W-40 Oil with Addition of TNANO's Graphene Nanoplatelets



- Preliminary data indicates gas mileage improvement > 5-18% depending on vintage/mileage of vehicles, as well as the types of oil utilized (conventional vs. synthetic).