

## Graphene Enhanced Roller Bearing Lubricants



The incorporation of graphene in a bearing lubricant can:

### **Reduce component wear**

Graphene will dramatically reduce the amount of wear between a bearing's metal components. Because graphene is highly resistant to thermal breakdown, lubricants incorporating graphene for high temperature applications will exhibit a greatly extended service life.

### **Promote a higher rate of heat rejection**

Graphene can be used to significantly increase the thermal conductivity of most bearing oils and greases enabling reduced operating temperatures. Like other carbon-based additives such as graphite and carbon black, the graphene sheets that form these nanoplatelets are thermally conductive. Unlike graphite and carbon black, however, the platelet morphology provides lower thermal contact resistance at lower loading levels, resulting in higher thermal conductivity vs. other carbon-based additives.

### **Provide a path for electrical charge dissipation**

The naturally high electrical conductivity of graphene makes it an excellent additive for incorporation into electrically conductive greases and pastes. When used as a lubricant additive for ball bearings in electric motors, the static discharge passes through the bearing instead of building up, arcing, and pitting the rolling element or raceway. High speed motor bearings are sensitive to any solid particles used to promote electrical conductivity. Due to its enhanced properties lower quantities of graphene are required compared to other solids, such as carbon black, in electrically conductive greases. The lower loading of graphene required, as well as its nano-scale size, can greatly extend bearing life.

**Let us formulate** a graphene enhanced bearing lubricant that will meet your specific bearing's requirements based on bearing design, operating temperature range, speed, loading and materials.

Syn-Tech Ltd. roller bearing lubricants can dramatically increase the performance of your mechanism by providing longer lasting, quieter operation over wider temperature ranges. Syn-Tech Ltd. supplies a wide range of synthetic based greases and oils proven to increase bearing life while reducing service intervals and customer down time.

**Our Expertise** Syn-Tech Ltd.'s product line has evolved products that satisfy applications of many types. Experience and in-house testing facilities have generated the knowledge to create and modify new and existing products to perform under rigorous demands. Contact our offices for assistance in lubricant selection.