

**PRODUCTION OF LUBRICANT USING SRI  
LANKAN GRAPHITE**

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## Abstract

Graphite is one of the allotropes of carbon. Unlike diamond, graphite is a conductor, and also a lubricant. The loose coupling among the sheets in graphite contributes to another industrially important property which is used as a dry lubricant. When a crystal structure occurs in graphite, it is a rough six-sided crystal that easily breaks down into flakes. This process is known as basal cleavage. These flakes readily slide across each other. This is the cause of the greasy characteristic of graphite and results in its application as a lubricant. There are several advantages of using graphite as a lubricant. Graphite has advantages in situations where wet lubricants might not be practical and also where lubricating porous substances such as wood. Graphite has the natural ability to conduct heat and electricity and is chemically inert. Graphite lubricant can enhance load carrying capacity. Graphite lubricant can solve sliding friction problems where conventional lubricants fail to perform and produce better bonding strength. Graphite, being naturally hydrophobic, resists rain, water, snow, and mud and aids in reducing the development of corrosion and rust on valuable equipment (Jie, 2012). This research focuses to produce a lubricant using Sri Lankan graphite at low cost in order to add value to local graphite resources. Furthermore, try to identify the best compound among possible compounds that can be used to produce graphite lubricant. And also the suitable concentration of that particular compound to obtain the best lubricity of graphite can also be identified throughout the research.

Finely ground Kahatagaha graphite in to 75 $\mu$ m were mixed with Coconut oil, Toluene and Carbon tetrachloride separately according to graphite and organic compound weight ratios. Viscosities of the graphite/organic liquid mixtures were measured by using Brookfield Viscometer after stirring and after mixing them in a ball mill. Then the data were separately plotted and analyzed. The best organic liquid used to produce graphite lubricant was identified which was obtained the higher viscosity. And the best concentration of that compound which was obtained the effective viscosity that can be practicable to use for industrial applications was identified.

Research concluded that among the coconut oil, toluene and carbon tetra chloride the best compound to produce the graphite lubricant was coconut oil and it should be blended in vibratory ball mill for effective lubricating property. Suitable viscosity range was achieved by 5% to 30% of graphite composition.