

A Study on the Wear Resistance and Lubrication Properties of Mixed Engine Oils



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Abstract Engine oils have traditionally served as the principal lubrication for combustion engines. With so many engine oils on the market, each has its unique set of ingredients and qualities that set it apart from the others. Customers are often influenced by the variety to switch between different types of engine oil. The wear resistance and lubrication properties of a few mixtures of different engine oil brands are investigated in this study. Three brands of engine oil were chosen and mixed in a 1:1 weight ratio. The viscosity, coefficient of friction (COF), and wear scar diameter (WSD) of the mixtures were determined using the Four-ball tribotester and viscosity testing equipment at three testing periods. The results demonstrate that the mixtures act differently than pure oil. Even though the mixing yielded more viscous lubricants, which is preferred, the data reveal that the COF and WSD also increased. The mixing might cause chemical interactions between additives, causing the oil's structure to change. According to this study, using pure oil is superior for extending the life of a combustion engine.

Keywords Four-ball tribotester · Wear scar diameter · Coefficient of friction · Viscosity · Engine oil

1 Introduction

Engine oil serves as a lubricant in the internal combustion engine. The engine oil lubricates the internal engine components, allowing for smooth movement and protecting against the constant interaction between the components [1–3]. The engine oil also acts as a coolant that regulates the temperature within the engine by absorbing the heat emitted [4].

The engine oil comes in a variety of grades to ensure that it performs correctly in a variety of engine situations. The SAE grade is the most often used. The grade is

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