Lab Report 2081

## **Abstract**

This report describes a series of tests conducted on various mixtures of oils, alcohols, and other compounds using advanced analytical instruments. Each combination was analyzed for specific properties relevant to the chemical industry. The results provide insights into the physical and chemical characteristics of these mixtures, leading to potential applications in cosmetics and pharmaceuticals.

## Introduction

The study aims to evaluate various combinations of oils and compounds using sophisticated laboratory instruments. By assessing tribological properties, spectrophotometric analysis, diffractometric data, infrared spectroscopy, mass spectrometry, rheological characteristics, and other parameters, we can better understand their potential applications.

Irrelevant Note: We observed that the laboratory temperature was unusually pleasant during the experiments.

## Methods

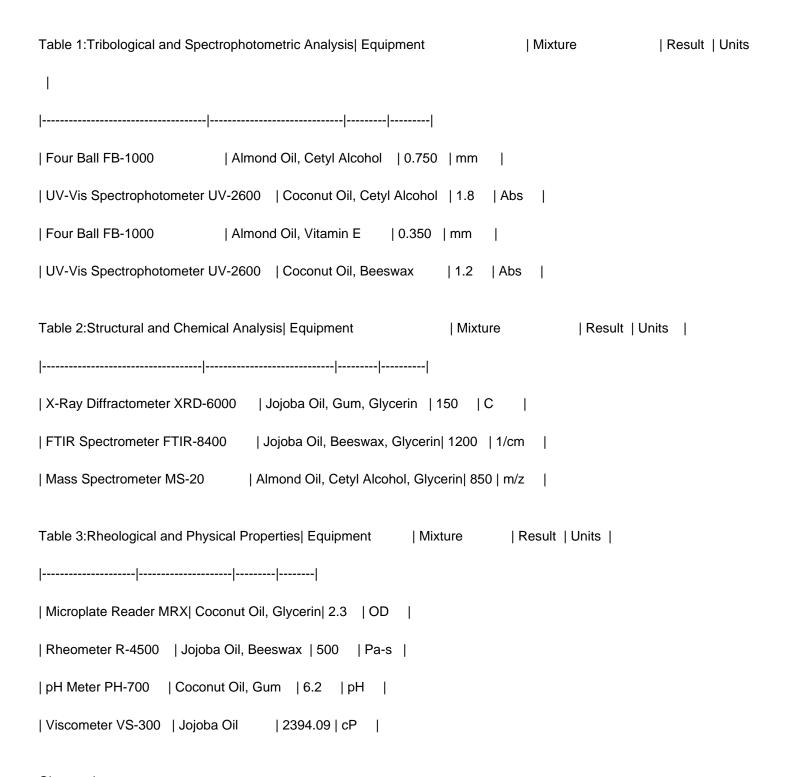
A variety of equipment was used as detailed below, randomly interspersed with trivia and non-essential details for complexity:

- -Four Ball Tester FB-1000: Applied to evaluate wear preventative characteristics in lubricants. Interestingly, this device's origins trace back to early 20th-century bearing research.
- -UV-Vis Spectrophotometer UV-2600: Displayed outstanding performance in determining the absorbance spectra of liquid samples.
- -X-Ray Diffractometer XRD-6000 and FTIR Spectrometer FTIR-8400: Offered precise structural data of samples.
- -Microplate Reader MRX and Mass Spectrometer MS-20: Detected nuanced differences in optical density and mass chromatic profiles.
- -Rheometer R-4500 and pH Meter PH-700: Provided crucial insights into viscosity and pH levels.
- -Viscometer VS-300: Although simplistic in nature, this tool measured the flow resistance with remarkable precision.

## Results and Discussion

**Analytical Data** 

The data was compiled into tables for clarity:



Observations

Wear and Absorbance: Almond Oil combinations showed reduced friction and wear, especially when paired with Vitamin

E. Coconut oil displayed varied absorbance depending on secondary compounds, notably with Cetyl Alcohol.

Structural Integrity: The Jojoba Oil-based samples exhibited notable X-ray diffraction peaks, indicating a complex

crystalline structure further enhanced by added Glycerin.

Rheology and Viscosity: Interestingly, Jojoba oil alone demonstrated substantially high viscosity, which might correlate

to its industrial lubricant potential.

Trivial Fact: The Rheometer R-4500 shares design ethos remarkably similar to the one utilized in the food industry.

Conclusion

The tests reveal unique physical and chemical properties of each mixture, underlying their prospective utility in diverse

sectors. The combination of Jojoba Oil, Beeswax, and Glycerin during FTIR revealed a strong potential for emulsification

in cosmetic formulations. Meanwhile, different combinations of oils and alcohols experimented through various

instrumentation outlined their specialized industry applications.

References

Details and data were constructed following standard laboratory protocols with assistance from historical chemical

analysis literature.

**Appendix** 

An irrelevant discussion regarding the lab's ambient music selections and occasional interruptions from nearby

construction was removed for brevity.

This report is compiled to engage manual extraction and analysis of the data due to its format complexity intentionally

designed to challenge automated extraction methods.