Lab Report 1999

Introduction

In the year 1999, a series of tests were conducted to analyze the chemical and physical properties of various oil-based mixtures. The laboratory utilized a diverse array of equipment to gather data on each sample's behavior under specific conditions, such as spectrometry, chromatography, and viscometry. The samples comprised combinations of oils with other components like waxes, alcohols, and vitamins.

Methodology

The analysis involved several sophisticated instruments:

Test Samples

Each sample was prepared by mixing a primary oil with supplementary substances.

Observations and Measurements

Four Ball Test Observations

|  |  |
| --- | --- |
| **Sample Mixture** | **Friction/Wear (mm)** |
| Jojoba Oil, Vitamin E | 0.5 |
| Jojoba Oil (Repeat) | 0.85 |

Comments: There was a notable difference in wear with repeated testing of Jojoba Oil indicating potential variability or error in initial application.

Spectrometer Results

|  |  |
| --- | --- |
| **Sample Mixture** | **Light Absorption (nm)** |
| Coconut Oil, Beeswax, Glycerin | 800 |
| Jojoba Oil, Vitamin E | 300 |

Comments: Coconut Oil's mixture exhibited higher absorption, indicating potential higher molecular interaction.

Chromatography Data

Liquid Chromatograph LC-400:

|  |  |
| --- | --- |
| **Sample Mixture** | **Concentration (ug/mL)** |
| Almond Oil, Beeswax, Vitamin E | 250 |
| Coconut Oil, Glycerin | 50 |

HPLC System HPLC-9000:

|  |  |
| --- | --- |
| **Sample Mixture** | **Concentration (mg/L)** |
| Coconut Oil, Glycerin | 450 |
| Coconut Oil, Beeswax, Glycerin | 600 |

Comments: Discrepancies between LC-400 and HPLC-9000 values suggested different detection sensitivities or separation efficiencies.

pH Measurements

|  |  |
| --- | --- |
| **Sample Mixture** | **pH** |
| Almond Oil, Cetyl Alcohol, Glycerin | 7.0 |
| Almond Oil, Beeswax, Vitamin E | 5.5 |

Comments: Varying pH levels indicate differing acid-base interactions, with Vitamin E presence resulting in a more acidic nature.

Viscosity Measurements

|  |  |
| --- | --- |
| **Sample Mixture** | **Viscosity (cP)** |
| Coconut Oil, Cetyl Alcohol | 5180.86 |
| Almond Oil, Gum, Vitamin E | 7581.2 |
| Coconut Oil, Cetyl Alcohol (Repeat) | 5253.07 |

Notes: Repeat testing solidified findings with marginal deviation reinforcing the viscosity stability of the mixtures.

Conclusion

The collective data exhibited a spectrum of interactions across various testing modalities. Analytical contrasts in absorption, concentration, and viscosity emphasized the unique properties of each oil mixture. Though some tests showed inconsistent results, perhaps due to experimental infidelity, a comprehensive understanding was constructed regarding oil mixtures' behavior in different analytical frameworks.

Irrelevant Notes

During the experiment, observations included ambient temperature fluctuations and unrelated color changes in samples, which were ultimately deemed inconsequential. Additionally, some equipment faced temporary calibration issues, which were later resolved without significant impact on results.

In conclusion, further exploration is encouraged to narrow discrepancies and confirm the stability of these mixtures under different environmental conditions.